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The Effects of Changes in Maternal Depressive Symptoms on Children's School Functioning in a High-risk Sample: The mediating Role of Maternal Behaviors, Children's Social Competence, and Children's Emotional Adjustment

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The Effects of Changes in Maternal Depressive Symptoms on Children's School Functioning in a High-risk Sample: The Mediating Role of Maternal Behaviors, Children's Social Competence, and Children's Emotional Adjustment

by

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The Effects of Changes in Maternal Depressive Symptoms on Children's School Functioning in a High-risk Sample: The mediating Role of Maternal Behaviors, Children's Social Competence, and Children's Emotional Adjustment

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Depression is a highly prevalent disorder among women of childbearing age. At any given time, approximately 8-12% of mothers are clinically depressed. Maternal depression has been associated with problematic outcomes in families, including impaired parenting, higher levels of conflict, socio-emotional difficulties in children, and poor academic outcomes for children. Although the effects of maternal depression on children have been well documented, little is known about children's functioning once mothers' symptoms change or alleviate. There is also a gap in knowledge about how maternal depressive symptoms affect children's outcomes. The purpose of this study is to move beyond the description of effects of maternal depression on children to examine

some underlying mechanisms that explain the effects of changes in maternal depressive symptoms on children's educational functioning. The sample consisted of 106 low-income families in which the majority of mothers were depressed and participating in a randomized treatment intervention. Women's symptoms of depression were assessed at baseline and 8-10 months later, while maternal behaviors, children's social competence, emotional adjustment, and their academic outcomes (school behaviors, academic achievement, academic performance) were assessed at 12 months of baseline. Findings suggested that changes in maternal depressive symptoms 8-10 months after baseline affected maternal or parenting behaviors but did not influence children's later social, emotional and education outcomes. The initial level of maternal depressive symptoms, on the other hand, had a meaningful influence on children's later school behaviors and academic performance though changes in social competence and emotional adjustment in children. The initial level of maternal depressive symptoms had a direct effect on children's later academic achievement, but this effect was not explained by maternal behaviors or children's socio-emotional functioning. Thus, support was found for maternal depression to have a long-term effect on children's adjustment. The findings were discussed in the context of the existing literature and recommendations for future research included overcoming barriers to identifying depression in low-income samples, implementing and evaluating preventive interventions for depression, designing interventions that promote family and community resources, and designing school-based policies and interventions for the effective identification and intervention of children at risk for problematic outcomes.

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CHAPTER 1: INTRODUCTION

Perhaps more than any institution besides the family, the influence of school on children's development remains strong (Hintze & Shapiro, 1999). Schooling influences are important because they are often not provided elsewhere and because they often predict children's competence in scholastic and personal domains (Moos, 1991). First, it is in school where children have the opportunity to interact with a large group of same-aged peers, are presented with formal instruction and curriculum, and where performance is both publicly and privately evaluated. Nowhere else are competence and performance so steadily stressed across a variety of domains (Hintze & Shapiro, 1999). Second, evidence is beginning to show that academic functioning in the elementary school years predicts academic functioning in the middle school years (Roeser, Eccles, & Freedman-Doan, 1999). Children's accomplishment of early school tasks provides a sense of mastery and esteem that in turn forms the foundation for successful academic, social, and emotional functioning later during adolescence (Butler, Marsh, Sheppard, & Sheppard, 1985).

School performance, self-perceptions of competence, and self-esteem all tend to be intercorrelated among school-age children (Barnett, Vondra, & Shonk, 1996; Moos, 1991). Barnett and colleagues argue that although the direction of effects is debatable, children who feel good about themselves tend to be intrinsically motivated and tend to be academically competent. For some children, difficulties in the school years can

foreshadow subsequent problems such as school withdrawal, substance abuse, delinquent activity, and teenage pregnancy (Roeser et al., 1999).

It has been proposed that school functioning in children is sensitive to a host of factors, ranging from socioeconomic status (Chilcoat, Breslau, & Anthony, 1996; Pungello, Kupersmidt, Burchinal, & Patterson, 1996), to parenting practices as well as monitoring and involvement (Chilcoat et al., 1996), to children's social competence (Kupersmidt, Coie, & Dodge, 1990), and emotional adjustment (Roeser et al., 1999; Weissman, Leaf, & Bruce, 1987). As will be noted later, these factors are often intercorrelated.

Children from economically disadvantaged homes are at risk for problematic educational outcomes (Barnett et al., 1996; Neisser, 1986; Pungello et al., 1996). Adverse social conditions such as poverty, unemployment, and crime, and exposure to racial or ethnic prejudice are common stressors for these families (Cicchetti & Rogosch, 1999). The cumulative effect of these stressors can reduce a child's motivation to learn and can interfere with memory and other cognitive processes involved in learning (Gougis, 1986). Families who experience these types of stressors often offer more limited resources to their children, including reduced time stimulating, fostering, and monitoring their children's emotional growth and every-day activities (Chilcoat et al., 1996). To make matters worse, socioeconomic hardship on mothers has consistently been found to correlate with maternal depression (Downey & Coyne, 1990).

Although maternal depression has been found to correlate with and to be exacerbated by social disadvantage, maternal depression in and of itself has been presumed to have adverse effects on children's adjustment (Goodman, Brogan, Lynch, &

Fielding, 1993; Hammen, 1996). Children of depressed mothers are more likely to display difficulty in regulating their emotions (Field, 1995; 1998), and as they grow older, are more likely to demonstrate decreased social competence, increased behavior problems, and decreased self-esteem (Downey & Coyne, 1990; Goodman et al., 1993).

Recently, investigators have studied the role of maternal depression on parenting behaviors that are crucial in promoting children's school functioning (Alpern & Lyons-Ruth, 1993; Sinclair and Murray, 1998; Wright, George, Burke, Gelfand, & Teti, 2000). Maternal depression appears to have an effect on parenting behaviors because depression impairs women's ability to demonstrate warmth, consistency, and positive affect (Embry & Dawson, 2002). Depressed mothers provide less guidance to their children and monitor their children's activities less consistently (Goodman, 1992). In addition, children of depressed mothers experience stress related to their mothers' depression, co-existing disrupted parent-child interactions, marital conflict, and to socioeconomic strains on the family. These children often develop coping styles that are similar to their mothers' or that result from limited social and personal coping resources (Goodman & Gotlib, 1999).

If children's social competence, emotional adjustment, and parenting behaviors of warmth and monitoring have been associated with children's success at school, then it would be expected that children of depressed mothers would be at risk for academic problems. In fact, several investigators have found that children of depressed mothers exhibit more problems at school, including internalizing and externalizing behaviors, peer rejection, and academic difficulties (Alpern & Lyons-Ruth, 1993; Sinclair & Murray, 1998; Wright et al., 2000). Unfortunately, these authors have found that children continue to exhibit some of these difficulties even when the mothers' symptoms alleviate.

Recent studies have begun to examine the effects of remission of maternal depression on children's adjustment (Timko, Cronkite, Berg, & Moos, 2002; Wright et al., 2000). However, given the many parenting and child characteristics that are affected by maternal depression, and given that these characteristics can potentially affect children's school adjustment, it is important for research to shift away from description of effects to explanation of effects (Hammen, Burge, & Stansbury, 1990). This type of research has been referred to as mediational because it studies the underlying mechanisms that explain or mediate the effect of one variable on another. For the present study, a mediational model was developed in which the predictor is the change of maternal depressive symptoms, the criterion is the child's school functioning, and the mediators are maternal behaviors, children's social competence, and children's emotional adjustment.

By examining mediational models of the effects of changes in maternal depressive symptoms on children's school functioning, the study has the potential to not only inform research about effective interventions with high-risk families, but also to test prevailing theories about maternal depression and risk factors for children of a depressed parent. The present study also furthers the understanding of children's context, such that children's academic, emotional, and family functioning are examined simultaneously. This research is necessary to address the functioning of the whole child given that these domains of functioning, the academic, the emotional, and the family context, are somewhat interdependent (Roeser et al., 1999). Because the present study was conducted with low-income children and their families, specific recommendations were made

relevant to the identification of depression as well as to the potential prevention and treatment efforts with this population.

CHAPTER 2: LITERATURE REVIEW

Depression and Families

Depression is a prevalent disorder among women of childbearing age (Beardslee, Versage, & Gladstone, 1998). At any given time, approximately 8% of mothers are clinically depressed, and the rate increases to 12% in mothers who have recently given birth (Weissman et al., 1987). Consequently, large numbers of children are exposed to maternal depression (Downey & Coyne, 1990).

Maternal depression can have deleterious effects on the developing child, yet little is known about how improvement of mother's symptoms impacts children's outcomes. First, the present study provides an overview of the effects of maternal depression on children's outcomes, with special emphasis on the mechanisms that place children of depressed mothers at increased risk for maladjustment. Second, the study reviews the literature relating to outcomes of children of initially depressed mothers who remain depressed or improve. School outcomes are of particular interest to the study and are discussed because of their substantial impact on the later adjustment of children. Further, underlying pathways that may explain 'how' and 'why' mothers' changes in depressive symptoms have an effect on children's school functioning are explored. Based on the review of these pathways, a mediational model that furthers the understanding of the effects of changes in maternal depressive symptoms on the school functioning of children is proposed for the present study.

Maternal Depression and Children's Outcomes

Maternal depression has been linked to maladjustment in children of different ages (Hammen, 1996). Compared with offspring of nondepressed controls, infants of depressed mothers have been found to be more fussy (Field, 1995), to obtain lower scores on measures of mental and motor development (Field, 1995; Field, 1998), and to have more difficult temperaments and less secure attachment to their mothers (Lyons-Ruth, Lyobchik, Wolfe, & Bronfman, 2002). Toddlers of depressed mothers have been found to react more negatively to stress and to be delayed in their acquisition of effective self-regulation strategies (Cicchetti, Rogosh, & Toth, 1998; Field, 1995; Goodman & Gotlib, 1999). The children and adolescents of depressed mothers are more likely to display decreased social competence, increased behavior problems, and decreased self-esteem (Goodman et al., 1993). More specifically, adolescents of depressed mothers are at heightened risk for externalizing, aggressive disorders, and internalizing problems with anxiety and depression (Beardslee et al., 1998; Downey & Coyne, 1990). Because social and emotional competence are associated with school functioning, it is not surprising then that children and adolescents of depressed mothers have been reported to exhibit greater difficulty at school (Burney Hamilton, Asarnow, & Tompson, 1997; Wright et al., 2000).

The mechanisms by which maternal depression increases the risk for developing adjustment difficulties in children remain unclear (Embry & Dawson, 2002). Clearly, genetic factors partially account for the problems of children with a depressed parent (Downey & Coyne, 1990). There may be heritable traits that predispose children of depressed mothers to developing similar emotional difficulties, such as negative

affectivity or low sociability (Goodman & Gotlib, 1999). In addition, there is some evidence that prenatal exposure to maternal depression contributes to the development of dysfunctional neuroregulatory mechanisms that may manifest themselves as maladaptive traits or tendencies after birth (Field, 1998).

Although it is likely that both genetic factors and the intrauterine environment contribute to risk for depression, these factors are unlikely to fully account for the increased risk for emotional and behavioral disorders exhibited by children of depressed mothers (Downey & Coyne, 1990; Hammen et al., 1990). In fact, shared stressful environmental influences, which increase the risk of developing depressive symptoms in both the mother and the child, have also been explored (see Goodman & Gotlib, 1999). Problems in living, including financial strain, marital discord, everyday and major worries, and social isolation often accompany and accentuate the effects of maternal depression on parenting competence (Downey & Coyne, 1990).

Maternal depression may contribute to children's adjustment difficulties by interfering in a number of ways with a mother's ability to parent her child (Embry & Dawson, 2002; Wright et al., 2000). First, depressed mothers have been described as less emotionally available, less positive, and slower to respond to their children (Goodman, 1992). Maternal warmth and responsiveness, both of which are impaired by depression, are consistently associated with security of attachment (Saarni, 1988). Not surprisingly then, children of depressed parents may not form the secure emotional attachments to their parents that are typical of children of healthy parents (Cummings, Davies, & Campbell, 2000).

Second, depressed mothers provide less appropriate structure, monitoring, guidance, and rule enforcement, and choose child management strategies that require less cognitive effort than do nondepressed mothers (Goodman, 1992). These strategies include enforcing obedience unilaterally or withdrawing when faced with child resistance, with the consequence that the child is likely to develop similarly passive and aggressive ways of responding (Patterson, 1982).

Finally, depressed mothers are likely to lack appropriate role modeling of behaviors, cognitions, and emotions for their children (Goodman & Gotlib, 1999). Field (1998) has shown that infants often become unhappy and disturbed when they are with their depressed mothers and develop a depressed mood style as early as three months of age that persists over the first year of life, if the mother's depression persists. This negative mood style persists even when the infant is interacting with nondepressed women. The lack of appropriate modeling of self-management by depressed parents may lead to a negative world view and ineffective coping skills by children of depressed parents (Goodman & Gotlib, 1999).

Based on the reviewed mechanisms of risk, it is important to understand children's functioning as a complex consequence of multiple, mutually influential factors (Hammen et al., 1990). Thus, it is not maternal depression in and of itself that accounts for children's functioning (Wright et al., 2000). Rather, parent and child characteristics appear to be affected by and accentuate the impact of maternal depression on children's behavioral, emotional, social, and academic problems (Coyne, Downey, & Boergers, 1992; Hammen et al., 1990). It remains to be explored whether maternal depression

affects children's outcomes above and beyond the previously noted parent (e.g., warmth and acceptance) and child variables (e.g., socioemotional competence).

In summary, maternal depression has been linked to maladjustment in children of different ages through many potential mechanisms of risk (Downey & Coyne, 1990; Goodman & Gotlib, 1999; Hammen, 1996; Timko et al., 2002). However, little is known about changes that occur among children when the mother's depressive disorder continues, partially remits, or fully remits. When mothers improve, do their parenting behaviors parallel more closely those of nondepressed mothers? Do children's coping strategies improve, and do they exhibit greater competence in interpersonal situations? Do improvements in parenting behaviors and children's social and emotional competence lead to positive changes in children's school functioning? The present study will review the literature on remission and changes of maternal depression with a focus on risk factors that are potentially malleable with therapy.

Remission and Changes of Maternal Depression on Children's Outcomes

If depression in women is associated with maladjustment in their children, it is expected that an amelioration of maternal depressive symptoms would be associated with an improvement of functioning in the child (Cowan & Cowan, 2002; Gotlib & Lee, 1996). Consistent with this prediction, Weissman (1983) reported improvements in the overall behavior of adolescent children, following the alleviation of their mothers' depression. In contrast, however, a number of researchers have found residual difficulties in young children after their mothers' symptomatic recovery. Cox, Puckering, Pound, and Mills (1987) studied mothers who were stably depressed for 6 months, were remitted by

6 months, or were never depressed. While a third of depressed mothers had recovered in 6 months, only one fifth of the children showed improvements. Children of remitted mothers were more disturbed at 6 months than children of never-depressed mothers, but less disturbed in social interactions than children of mothers who were stably depressed.

Billings and Moos (1986) found that remitted parents continued to report greater dysfunction in their children than did never-depressed parents, though a non-remitted depressed group reported the highest incidence of dysfunction in their children. These families also reported a greater number of stressors and conflict, and less cohesion and expressiveness than did the families in which the parent's depression had remitted. In other studies, despite a reduction in reported depressive symptoms and psychosocial problems, women continued to describe their school-aged children as having a higher number of internalizing problems (Lee and Gotlib, 1991) and externalizing problems (Gotlib & Lee, 1996) than did never-depressed mothers.

In a recent study of maternal depression and children's long-term outcomes (Timko, Cronkite, Berg, and Moos, 2002), at baseline, 1 year, and 4 years, children of stably remitted parents were comparable to controls in psychological distress, but these gains were not maintained by the children of stably remitted parents at 10 years. Children of partially remitted parents had more psychological distress and physical health problem than did children of control parents at 1 year and 10 years. These children were more likely than controls to suffer anxiety, to feel sad, and to have allergies. Timko et al. also found impaired family functioning at 10 years for partially remitted and nonremitted families while stably remitted families were lower on independence and higher on organization than control families.

Alpern and Lyons-Ruth (1993) assessed mothers and their 4 to 6 year-old children. Children of chronically depressed mothers and of remitted mothers had more problem behaviors at home than children of non-depressed mothers. In fact, these difficulties were observed in other settings, such as school. The authors found that children of chronically depressed mothers had more hostile behavior at school, and children of remitted mothers were more anxious (fearful and withdrawn) at school, in comparison to children of non-depressed mothers. Unexpectedly, children of remitted mothers were more likely than children of chronically depressed mothers to exhibit anxiety symptoms at school.

Similarly, Sinclair and Murray (1998) found that mother's previous and continuing experiences of depression placed their child at risk for difficulties in adjusting to school. The more recently the mother had been depressed, the greater immaturity, emotional arousal, and distractibility the child exhibited. In addition, more recent maternal depression was associated with an increase in hyperactive behavior, especially for boys. The authors found that maternal depression and school adjustment was moderated by the child's gender and family socioeconomic status (SES). The effects of maternal depression were most evident among boys and those from lower SES families. These findings stand in contrast to the behavior of the daughters. Girls were, in fact, exposed to significantly longer and more recent maternal depression than boys, and yet they were generally viewed by their teachers as well adjusted (Sinclair & Murray, 1998). As discussed later, boys' problems may have been reported more by teachers because of the teacher's readiness to notice externalizing over internalizing behaviors.

Wright et al. (2000) concluded that children of depressed mothers experience significant difficulties in school. In their study, they found that children of depressed mothers later adapted less well to many aspects of the school environment than children of mothers who were not depressed. In fact, teachers reported that the children of depressed mothers were significantly disadvantaged in nearly all school-related domains of adjustment, ranging from behavior problems and peer relations to academic performance. These children had more behavior problems and were more often described by teachers as aggressive, angry, defiant, and uncooperative, relative to children of non-depressed mothers (Wright et al., 2000). However, unlike the Alpern and Lyons-Ruth (1993) study described above, Wright and colleagues did not find an association between maternal depression and children's anxious and withdrawn internalizing behaviors. Wright and colleagues' failure to find this association may have been due to the fact that only teacher ratings were used to assess emotional difficulties in children. Future studies should include parent and child ratings as well, as they may be more sensitive to certain child problems such as anxiety, fear, and shyness.

Methodological Limitations of Studies

Generalizations about these findings are limited by the studies' varied methodologies. Some studies examined adolescents of depressed mothers (Weissman, 1983), others examined children as young as 2-years old (Cox et al., 1987), and others included children from widely different ages (Lee & Gotlib, 1991). As was described earlier, children of depressed parents suffer from somewhat different types of adjustment problems at different ages, and these variations could be obscured by combining children of very different ages and developmental levels in a single, small sample study.

Although the majority of studies reviewed focused on maternal depression, a few included depressed fathers in their samples (e.g., Billings & Moos, 1986). Given that mothers and fathers influence their children in different ways (e.g., amount of time spent with children, type of nurturance given), future studies should control for the effects of gender of the depressed parent on children's outcomes.

From the majority of studies reviewed, it is unclear whether it is the parent's changes in depressive symptoms or their initial severity of impairment that explains their child's functioning when their depressive symptoms improve or worsen. Future studies should examine the effects of parent's improvement on children's outcomes while controlling for the parent's initial severity of impairment.

A common problem to many research efforts in this area is informant variability, defined as the extent to which different sources of information vary in their evaluation of the child (Gelfand & Teti, 1990). Some studies have called into question the accuracy of depressed mothers in reporting their children's behaviors (see Richters & Pellegrini, 1989). These studies claim that depressed mothers tend to be biased observers of their children's behavior, reporting more conduct problems than can be independently confirmed, and minimizing their children's depression. In consequence, studies that rely solely on depressed parent's report for the identification of children's problems (e.g. Billings and Moos, 1986; Lee & Gotlib, 1991) may have limited validity. Similarly, other studies have tried to compensate for the possible bias of depressed mothers by relying on teacher reports of children's functioning (e.g., Sinclair & Murray, 1998; Wright et al., 2000). However, Richters and Pellegrini (1989) compared teachers' ratings of children with ratings provided by their mothers and found that, while depressed mothers or

mothers with a history or vulnerability to depression rated their children as manifesting significantly more behavioral problems than non-depressed mothers, these ratings did not differ from teacher ratings.

In terms of differential reporting of disorders, Kazdin (1994) found that parents and teachers tend to report more externalizing symptoms than children, who are better reporters of internalizing symptoms. However, Wright et al. (2000) suggested that mothers might be more sensitive than teachers to certain child problems such as anxiety and shyness. Future research should include reports from different sources, including the child.

Another limitation of most studies reviewed is the small sample size from which they have drawn conclusions. Obstacles to care in high-risk samples can compound the difficulty of identifying and recruiting families with a depressed parent. Severity of depression is undoubtedly negatively related to willingness to participate in research projects (Gelfand & Teti, 1990). A consequence of this limitation is that small sample sizes are used in research, making it difficult to generalize confidently from the results obtained (e.g., Hammen et al., 1990). Future research will need to examine factors influencing families' participation in research so as to optimize recruitment and obtain larger sample sizes in studies.

A final limitation worth mentioning in the existing research of maternal depression and children's outcomes is one of emphasis. The majority of researchers and theorists have focused on children's socioemotional competence. Recent studies have begun to explore the effects of maternal depression on other outcomes of children, particularly school functioning (e.g., Sinclair & Murray, 1998; Wright et al., 2000). This

direction seems promising but much remains to be discovered about the effects of maternal depression on children's academic performance, academic achievement, motivation, school behaviors, and social and emotional competence within the school setting. The present study will examine parenting and children's socioemotional outcomes as they mediate the effects of changes in maternal depressive symptoms on children's academic performance, academic achievement, and school behaviors. The following discussion briefly refers first to the importance of school adjustment in children's overall and later functioning. Then, mechanisms influencing the effects of change in maternal depressive symptoms on children's various indicators of school functioning were examined.

The Importance of School Functioning in Children's Adjustment

Research suggests that academic functioning in the early school years predicts later academic functioning (Roeser et al., 1999), and that it is highly correlated with children's social competence and emotional adjustment (Barnett et al., 1996; Moos, 1991). For some children, difficulties in the school years can foreshadow subsequent problems such as school withdrawal, substance abuse, delinquent activity, and teenage pregnancy (Roeser et al., 1999). Besides the family, school has a strong influence on children's development and merits further attention from researchers.

School functioning in children often is influenced by a host of factors, ranging from socioeconomic status (Chilcoat et al., 1996), to parent warmth, acceptance, monitoring and involvement (Chilcoat et al., 1996), and to children's social (Kupersmidt et al., 1990) and emotional competence (Weissman et al., 1987). If children's social and

emotional competence, and parenting behaviors of warmth and monitoring of school activities has been associated with children's success at school, then it would be expected that children of depressed mothers would be at risk for academic problems. In fact, several investigators have found that children of depressed mothers exhibit more problems at school, including internalizing and externalizing behaviors, peer rejection, and academic difficulties (Alpern & Lyons-Ruth, 1993; Wright et al., 2000).

Unfortunately, research has thus far examined the long-term school adjustment of children of chronically depressed mothers and remitted mothers by documenting its occurrence. To date, no studies have examined how changes in maternal depressive symptoms affect children's school functioning. The following discussion focuses on three mechanisms or pathways through which changes in depressive symptoms of mothers may have an effect on their children's school functioning: (a) maternal behaviors, (b) children's social competence, and (c) children's emotional adjustment. In other words, changes in maternal depressive symptoms may be affecting children's school adjustment via parent and child characteristics. These characteristics are considered mediators because they are potential outcomes of changes in maternal depression and, in turn, predict children's school outcomes.

Pathways to Children's School Adjustment

Maternal Behaviors and Children's School Functioning

Maternal or parenting behaviors have been found to have an impact on child behaviors (Goodman & Gotlib, 1999). Kotchick & Forehand (2002) reviewed the parenting literature and found that parenting behaviors and attitudes that include the

provision of positive reinforcement, open displays of warmth or affection, active monitoring of children's activities, and consistent discipline strategies have been linked to a variety of children's outcomes. Warmth and consistent discipline have been found to strengthen the parent-child relationship and allow the parent to interact with the child in predictable ways, which relates positively to academic competence, self-confidence, and positive peer relations (Kotchick & Forehand, 2002). Parent monitoring refers to parent awareness of and supervision of a child's activities, and has been identified as one of the most consistent predictors of school outcomes in childhood and adolescence (Chilcoat et al., 1996; Izzo, Weissberg, Kasprow, & Fendrich, 1999). Parents' activities at home, such as amount of time spent helping with schoolwork, monitoring study time, and discussing academic or interpersonal issues at school significantly predict academic achievement and school performance in children. In fact, Izzo and colleagues investigated the impact of the following four dimensions of parental involvement on school performance of children: frequency of parent-teacher contacts, quality of the parent-teacher interactions, participation in educational activities at home (i.e., monitoring), and participation in school activities. Monitoring was found to predict the widest range of performance variables.

Maternal depression and parenting behaviors. Depression impacts the ability of mothers to effectively guide, support, and monitor their children's activities (Beardslee et al., 1998; Hammen, 1996). Lovejoy, Graczyk, O'Hare, and Neuman (2000) propose that depression is characterized by disturbances in both positive and negative affect, and many depressed individuals experience a variety of distressing affects, including sadness, anxiety, irritability, and tension, which may account for hostile, critical, intrusive, and

coercive behaviors. Gelfand, Teti, Seiner, and Jameson (1996) suggest that ruminations and inability to focus on others may limit depressed parents' ability to track and monitor their children's activities. This lack of supervision puts children at risk for school failure, as well as poor health (e.g., high rate of accidents), and behavioral outcomes such as drug abuse and associations with deviant peers (Chilcoat et al., 1996).

Without basic needs of warmth, consistent discipline, supervision and monitoring met, children are unlikely to develop a sense of control or mastery in their environment (Gelfand & Teti, 1990). Children gain their sense of control from their early ability to acquire what they want and to avoid unpleasant experiences, as well as their perception that their parent(s) are able to control their shared environment. Given the harsh and coercive behaviors and the lack of monitoring of a mother impaired by depression, offspring are likely to learn that they have little control over their environments, and may develop the negative attributional styles of their depressed parents as well (Hammen, 1997). They may assume a sense of hopelessness that leads to beliefs that they cannot control their lives. This dysfunctional cognitive style is related to subsequent depression in children and adolescents (Garber, Weiss, & Stanley, 1993; Hammen, 1997). Although impaired parenting practices may place children at risk for depression and other problematic outcomes, it is important to keep in mind that child characteristics and the parent-child relationship (Hammen, Burge, & Stansbury, 1990) as well as socioeconomic and community influences (Kotchick & Forehand, 2002) contribute to parenting practices in these families.

One study has indirectly addressed the effects of initial parental depression on later parent monitoring behaviors of mothers (Timko et al., 2002). While non-remitted

parents continued to provide poor organization and monitoring at 1 year and 10 years after the parents' initial depressive episode, stably remitted families were characterized by an overemphasis on organization (monitoring) at those same time periods, as compared to partially remitted families. The authors propose that stably remitted parents may be trying to counteract the insufficient structure and supervision provided during the time they were depressed. Further studies must be conducted to determine the validity of these findings, as they have important implications for interventions of maternal depression that also address parenting.

To date, no study has addressed the effect of changes in maternal depressive symptoms on children's school functioning via maternal behaviors. For this study, it is hypothesized that children's school functioning is affected in different ways by changes of maternal depressive symptoms, through changes in maternal behaviors.

Children's Social Competence and School Functioning

Social competence is a complex, multidimensional construct consisting of a variety of behavioral and cognitive variables, as well as aspects of emotional adjustment necessary to developing adequate social relations (Hintze & Shapiro, 1999). Social competence, including social skills and peer relations, has been found to be important in children's success in school (Kupersmidt et al., 1990; Pungello et al., 1996). Social skills include interpersonal behaviors (e.g., cooperative behaviors), self-related behaviors (e.g., expressing feelings, assertion), and task-related behaviors (e.g., attending behavior). Thus, social competence emerges from social skills because it is based on interpersonal abilities which promote socially agreeable behaviors and enable adept interaction with others (Childs, Schneider, & Dula, 2001). Inadequate social skills in children predict later

adjustment problems in the areas of academic, social, and psychological functioning (Childs et al., 2001). Peer relations are highly determined by social skills, and have a high correspondence with peer acceptance and rejection (Hintze & Shapiro, 1999). Early problems in peer relations have been correlated with an array of adjustment problems in later life, including psychopathology, delinquency, and suicide (Goodman et al., 1993; Kupersmidt et al., 1990; Timko & Moos, 1996). Further, research has suggested that peer rejection is predictive of poor academic achievement and early school withdrawal (Buhs & Ladd, 2001; Taylor, 1990). Buhs and Ladd (2001) studied possible mediators of the links between peer rejection and children's adjustment in school. They found that peer rejection's impact on adjustment is not entirely direct but, rather, is partially mediated through processes such as elevated peer maltreatment and reduced participation in classroom activities.

Maternal depression and children's social competence. Previous research indicates that children of depressed mothers demonstrate deficits in social competence (Hammen & Brennan, 2001; Richters & Pelligrini, 1989; Timko et al., 2002). Hammen and Brennan (2001) studied depressed adolescents of depressed and nondepressed mothers. Depressed children of depressed mothers experienced greater difficulty in negotiating interpersonal relationships, reported to have fewer friends, were more likely to have elevated rates of interpersonal conflict, and were more likely to evidence dysfunctional social-cognitive skills than depressed children of non-depressed mothers. Consistent with these findings, some evidence exists that teachers judge school-age children of depressed parents to have less adequate peer relationships than children of

non-depressed mothers (Billings & Moos, 1986). Goodman et al. (1993) found that children of depressed mothers interpreted others' intentions as hostile which negatively affected their peer relations. Children who approach peers with a corresponding hostile or defensive stance are likely to be less popular. Of even greater concern is the likelihood that peers may maintain the deviant behavior by coming to expect the child to be habitually inappropriate in his or her behavior (Goodman & Gotlib, 1999).

Children of depressed parents could be expected to have impaired peer relation skills and to be less popular for a variety of reasons. The depressed parent may fail to provide an adequate model for healthy social relationships (Childs et al., 2001). Depression is often associated with absence of close relationships and with negative and conflictual family relationships (Stark, Humphrey, Crook, & Lewis, 1990). Further, the withdrawn, irritable, and unresponsive behavior of a depressed parent may convey maladaptive skills for social interaction. Finally, the child who has been raised by a depressed parent may have developed a coping style of withdrawal in reaction to inadequate support from parents (Downey & Coyne, 1990; Goodman et al., 1993; Lee & Gotlib, 1991).

Within the social competence literature, protective and risk mechanisms have been identified. Results of a study by Jacobs Sandstrom and Coie (1999) indicated that perceived social status, participation in extracurricular activities, locus of control, and parental monitoring were all positively related to status improvement among initially rejected children. DeRosier, Kupersmidt, and Patterson (1994) found that initial level of adjustment, gender, and development moderated the relation among peer rejection and later academic adjustment. Research needs to be conducted in order to understand

children's social competence as an outcome of mothers' change in depressive symptoms and as a predictor of children's school outcomes. Given the impact of maternal depression on children's social competence, a goal of the present study is to examine whether changes of maternal depressive symptoms have an impact on the child's school functioning, via effects on the child's social competence.

Children's Emotional Adjustment and School Functioning

The quality of children's emotional adjustment is viewed as an important influence on their school functioning. Roeser and colleagues (1999) documented that a substantial number of children show declines in their academic motivation and achievement, and increases in behavioral problems and emotional distress during the middle school years. These negative trends are particularly apparent among those youth who experience academic or behavioral problems earlier in elementary school years (Dishion, Patterson, Stoolmiller, & Skinner, 1991), and among those children who have trouble adjusting to the many concurrent biological, psychological, and social changes of early adolescence (Roeser, Eccles, & Sameroff, 1998). Kumpulainen et al. (1999) assessed the relationship between psychological deviance and performance level at school among 8-year-old children. The authors found that low achievers had more psychiatric symptoms than other children. In fact, two thirds of children who received special education services had some psychological disorder. Children with depression and attention deficit disorders were more likely to receive extra tutoring when compared with children without psychological disorders (Kumpulainen et al., 1999).

Roeser et al. (1999) examined patterns of academic functioning and mental health in a sample of 184 children. The authors' findings indicated that youth with multiple

psychological symptoms showed long-term continuity in terms of their poor academic motivation, low grades, and low self-esteem during the years between elementary and high school. An important mediator of such continuity of impairment is the child's internalizations of negative self-perceptions of academic competence, negative feelings of self-worth, and a sense of school as uninteresting and unimportant. It is very likely that poor achievement and feedback from parents and teachers are major contributors to the internalization of such negative beliefs (Roeser et al., 1999). Thus, these and other findings suggest that it is not simply low intelligence that accounts for such long-term difficulties (Garnefski & Diekstra, 1996; Rapport, Denney, Chung, & Hustace, 2001; Roeser et al., 1999; Weissman et al, 1987).

The intra-psychic processes by which emotional distress can impact academic attainments are many, including motivational and cognitive processes. In terms of motivational processes, there is evidence that when sufficiently intense, children's feelings of anger, hopelessness, and sadness can negatively color their beliefs about themselves, including how they perceive their academic competence (Roeser et al., 1998). Poor self-perceptions of academic competence can lead to poor academic performance. In terms of cognitive processes, studies of clinical and non-clinical samples of children have demonstrated that depressive symptoms are associated with impaired problem-solving capacities and diminished academic performance (Hintze & Shapiro, 1999).

The relationship between emotional functioning and academic adjustment is reciprocal (Roeser et al., 1998) . Emotionally well-adjusted children are more likely to succeed in school, which will further enhance their self-esteem and perceived

competence in school and other areas of functioning. A similar, yet negative, pattern would be expected of children with emotional difficulties.

It is unclear whether gender differences occur in the school adjustment of children with emotional difficulties. Birmaher et al. (1996) reviewed the literature of depression in children and found no differences in the rates of depression or impairment in other areas of functioning among pre-adolescents (12 years or younger), whereas in adolescents, the female-to-male ratio is approximately 2:1, particularly for depression. Data on children's adjustment of depressed mothers is more inconclusive. Sinclair and Murray (1998) found that gender had pervasive influences on children's adjustment. Postnatal and recent maternal depression was associated with significantly raised levels of child hyperactivity, particularly among boys and those from lower socioeconomic status.

Maternal depression and children's emotional adjustment. School-aged children of depressed mothers generally display higher levels of both externalizing and internalizing symptoms than children of non-depressed mothers. This finding emerges in reports by teachers (Lee & Gotlib, 1989; Richters & Pelligrini, 1989), by parents (Lee & Gotlib, 1989; Richters & Pelligrini, 1989), and by the children themselves (Beardslee, Bemporad, Keller, & Klerman, 1983). In fact, children of depressed parents have been found to be 2 to 5 times more likely to develop behavioral problems than children of nondepressed parents (Beardslee et al., 1983), with even higher rates of disorder reported in some studies (see Cummings et al., 2000). A significant percentage of children of depressed parents develop depression, and over one-third of parents with a depressed child are depressed themselves. Other indicators of maladjustment in these children include higher levels of treatment for psychiatric disturbance (see Orvaschel, Welsh-

Allis, & Weijai, 1988), higher levels of functional impairment (Lee & Gotlib, 1989; Weissman et al., 1987), and a higher proportion of children scoring in the clinical range on symptom checklists (Lee & Gotlib, 1989).

The maternal depression remission literature has been inconclusive regarding the emotional adjustment of children. Although some studies report continued, but improved, overall emotional functioning in children of initially depressed mothers (Weissman, 1983), some report improvement mostly in children's externalizing behaviors (Lee & Gotlib, 1991). Further, Timko et al. (2002) found that children of stably remitted parents at 10 years of the mother's initial depression experienced more psychological distress and were more likely to be classified as disturbed than children of never-depressed parents. In fact, at 10 years, children of stably remitted parents were comparable on psychological distress to children of partially remitted or nonremitted parents. Although children of stably remitted parents in this study also exhibited more difficulties in school, the relationship between emotional and academic functioning was not directly assessed.

A goal of the present study is to examine the impact of changes of maternal depressive symptoms on the school functioning of children of high-risk mothers, via changes in the child's emotional adjustment.

The Broader Context of Maternal Depression

It has been documented that maternal depression and, more recently, changes of maternal depressive symptoms have an effect on children's school functioning. However, in order to understand children's outcomes, the broader social and interpersonal stressors operating in the lives of depressed mothers must be considered (Goodman & Gotlib,

1999). Of particular interest to this study is the association between income and maternal depression.

Maternal depression has been found to correlate with external stressors such as social disadvantage and economic hardship (Downey & Coyne, 1990; Heneghan, Johnson, Bauman, Westbrook, & Stein, 1998). Low-income families often face high levels of disruption and adversities, such as high-crime environments, job and housing discrimination, and major negative life events such as the death or incarceration of family members. These adversities have been shown to have seriously negative consequences in children's lives and have a cumulative effect (Cicchetti & Rogosch, 1999).

Social disadvantage exacerbates the impact of maternal depression on children's school adjustment in many ways. Economic hardship and being a single parent might impede effective parenting in the form of limited resources, including reduced time for care-giving, monitoring, and supervision (Chilcoat et al., 1996; Kotchick & Forehand, 2002). These children may lack stable family routines and environments in which they know what to expect. In general, the emotional instability of the depressed mothers, associated with lack of predictable discipline and multiple threats to normal family routines, are likely to lead to persistent stress in the children and a sense of lack of control. Bradley , Corwyn, McAdoo, and Garcia-Coll (2001) found that poverty is more likely than ethnicity to significantly predict parenting. Thus, poor mothers were less likely than non-poor parents to communicate effectively with their children and were more likely to use inconsistent discipline. Finally, external stressors place a strain on the coping resources of the child and the family (Heneghan et al., 1998; Sinclair & Murray, 1998). Negative life events and disadvantage negatively affect the beliefs of adequacy

and competence that an individual has in self-worth, relationships with others, and achievement in different areas of life. Not surprisingly, low family income and minority ethnic status are significant predictors of children's academic achievement over time (Pungello et al., 1996).

In summary, children from low socioeconomic backgrounds have higher rates of academic, emotional, and social problems (Barnett et al., 1996; Izzo et al., 1999), and may have the most to gain from their mothers' emotional well-being because of the harsh environmental conditions they often face (Dubow & Ippolito, 1994). Income has effects on children through monetary and nonmonetary capacities (Yeung, Linver, & Brooks-Gunn, 2002). Low income families have limited access to resources and are not able to purchase materials, experiences and services to invest in their children's education. Low family income is also detrimental to children's development because of its association with parents' nonmonetary capacities, such as their emotional well-being and interactions with their children, which in turn are related to children's outcomes. Lower income parents often differ from school personnel culturally and educationally, further adding to their alienation from schools and their child's academic activities. The present study will examine how parenting or maternal behaviors, and children's social competence, and emotional adjustment, explain the effects of changes of depressive symptoms in low-income women on the school functioning of their children.

Rationale for a Mediational Model

Many theorists and researchers have written about the adverse effects of maternal depression on children (Embry & Dawson, 2002; Gelfand & Teti, 1998; Hammen, 1997;

Lee & Gotlib, 1989). Most of that work has focused on documenting the negative outcomes in functioning and diagnostic status of children whose mothers are clinically or subclinically depressed (Cox et al., 1987; Goodman & Gotlib, 1999; Orvaschel et al., 1988). However, little is known about children's outcomes when maternal depressive symptoms change. Further, research has not addressed the role of mediating variables that explain the impact of changes of maternal depressive symptoms on children's school functioning.

According to Baron and Kenny (1986), conceptually, a mediator variable (B) is one that explains how or why another variable (A) affects an outcome (O). Total mediation occurs when A is no longer significant in its effect on the outcome (O). Partial mediation occurs when both A and B are significant in their effect on the outcome (O). Figure 1 illustrates mediation model.

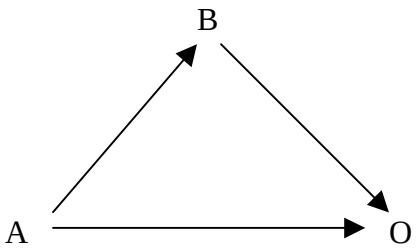

Figure 1. Mediational model

In the present study, a triple pathway or mediational model, linking symptom change of initially at-risk or depressed women to their children's school functioning, is hypothesized based on extant literature (Cowan & Cowan, 2002; Sinclair & Murray, 1998; Timko et al., 2002; Wright et al., 2000). At the most general level, it is postulated

that the relationship between maternal symptom change and children's school functioning, suggested by the literature review, reflects the impact of maternal symptom change on maternal behaviors (Chilcoat et al., 1996), children's social competence (Burney et al., 1997), and children's emotional adjustment (Burney et al., 1997; Goodman et al., 1993), that contribute to children's school functioning (i.e., achievement, performance, and school behaviors) (Garnefski et al., 1996; Wright et al., 2000).

It is hypothesized that three pathways, maternal behaviors, children's social competence, and children's emotional adjustment, mediate the relationship between changes of maternal depressive symptoms and school functioning of children after controlling for the mother's initial severity of impairment. First, for the maternal behaviors pathway, it is hypothesized that changes of depressive symptoms in mothers have an effect on maternal behaviors of acceptance and consistent discipline. If mothers display more warmth and acceptance and engage in consistent discipline practices, children's school functioning would be expected to improve (Izzo et al., 1999). Thus, maternal behaviors may explain the effects of changes in maternal depressive symptoms on children's school outcomes.

Second, the child social competence pathway, comprised of social skills of cooperation, assertion, and self-control, is presumed to mediate the effects of maternal depressive symptom change on the school functioning of children. Child social competence is hypothesized to be influenced by changes of maternal depressive symptoms. If mothers become less impaired by depression, they may establish healthier social relationships with their children and that provide a more adequate model for adaptive social skills (Goodman et al., 1993). Children's emerging social skills, in turn,

might elicit increasing levels of social support from their mother that are generalized to their interactions with peers (Goodman et al., 1993). The resulting effects on social competence in children would then have an effect on children's school functioning, thereby explaining the effects of maternal symptom change on school functioning in children (Roeser et al., 1998; 1999).

Finally, the child emotional pathway consists of the child's internalizing and externalizing behaviors, and is presumed to mediate the effects of maternal change of depressive symptoms on school functioning in children. Thus, changes in maternal depressive symptoms would have an effect on children's emotional adjustment by decreasing the amount of family distress and by allowing the mother to model more adequate mood regulation and coping skills (Orvaschel et al., 1988). Changes on children's emotional adjustment would then have an effect on children's school functioning (Roeser et al., 1999). Emotional adjustment would explain the effects of changes in maternal depressive symptoms on children's school functioning.

In summary, the proposed pathway model implies that changes in maternal depressive symptoms are associated with maternal behaviors, and child's social and emotional competence, which are, in turn, presumed to affect children's school functioning.

CHAPTER 3: RESEARCH STUDY

The proposed study is an investigation of a hypothesized model of the effects of changes of depressive symptoms in a high-risk sample of women on the school functioning of their 5- to 10-year old children. Maternal behaviors, child's social competence, and child's emotional adjustment are expected to serve as mediators in the effects of changes of maternal depressive symptoms on children's school outcomes.

Research indicates that maternal depression has a negative impact on both parenting and children's adjustment (Embry & Dawson, 2002; Gelfand & Teti, 1990; Goodman et al., 1999). Maternal depression appears to have an effect on parenting behaviors because depression impairs women's ability to demonstrate warmth, consistency, and positive affect (Embry & Dawson, 2002). Depressed mothers also provide less guidance to their children and monitor their children's activities less consistently (Goodman, 1992).

Children of depressed mothers have been found to be at increased risk for maladjustment in several areas, including social competence (Denham, Zahn-Waxler, Cummings, & Iannotti, 1991; Goodman et al., 1993) and emotional functioning (Beardslee et al., 1998; Orvaschel et al., 1988; Rudolph, Hammen, & Burge, 1997). Children of depressed mothers experience stress related to their mothers' depression, co-existing disrupted parent-child interactions, marital conflict, and to socioeconomic strains on the family. These children often develop coping styles that are similar to their mothers' or that result from limited social and personal coping resources (Goodman & Gotlib, 1999).

Children's social and emotional competence, and maternal behaviors have been associated with children's success at school (Izzo et al., 1999; Roeser et al., 1998; 1999). Thus, it would be expected that children of depressed mothers would be at risk for academic problems. In fact, several investigators have found that children of depressed mothers exhibit more problems at school, including internalizing and externalizing behaviors, peer rejection, and academic difficulties (Alpern & Lyons-Ruth, 1993; Sinclair & Murray, 1998; Wright et al., 2000). Unfortunately, these authors have found that, unlike expected, children continue to exhibit some of these difficulties even when the mothers' symptoms alleviate.

Disadvantaged income has a negative effect on parenting behaviors and on children's social competence, emotional adjustment and school outcomes (Albright & Tamis LeMonda, 2002; Heneghan et al., 1998; Kotchick & Forehand, 2002; Yeung et al. 2002). Maternal depression appears to impact and be exacerbated by social disadvantage because low-income families often face high levels of disruption and stress. Greater numbers of low-income women raise their children as single parents (Cicchetti & Rogosch, 1999), experiencing more limited monetary resources to invest in their children and more limitations on their parenting capabilities (Heneghan et al., 1998; Yeung et al., 2002). The present study addresses low-income women who are initially depressed or at risk of becoming depressed and the mediating variables that affect the link from changes in the mothers' depressive symptoms to their children's school functioning.

Currently, it remains unclear how children's school outcomes are affected when mothers' mental health changes. If maternal behaviors, children's social competence, and children's emotional adjustment appear to be affected by maternal depression, do

children's social competence and emotional adjustment change as a result of changes in maternal depressive symptoms? Do changes in social and emotional competence in children have an effect on children's school functioning? If so, do social competence and emotional adjustment explain the effects of changes in maternal depressive symptoms on children's school functioning?

Do changes in maternal depressive symptoms lead to changes in maternal behaviors? If maternal behaviors of warmth, acceptance, and consistent discipline are related to children's school outcomes, do changes in maternal behaviors result in changes in children's school outcomes? If so, do maternal behaviors explain the effects of changes in maternal depressive symptoms on children's school functioning?

Ample evidence exists to demonstrate that maternal depression has deleterious effects on children's outcomes (Beardslee et al., 1998; Gelfand & Teti, 1990; Hammen et al., 1990), but little is known about children's outcomes if maternal depressive symptoms change. In addition, it currently remains unclear how potential parenting and child processes might account for the links observed between changes of maternal depressive symptoms and children's school functioning. Thus, the literature on maternal depression has been primarily descriptive (Hammen et al., 1990). Figure 2 illustrates a traditionally descriptive approach to examining the effects of mothers' change in depressive symptoms on children's outcomes in school.

Figure 2. A traditionally descriptive approach to establishing the link between mother's changes of depressive symptoms and children's school functioning.

This proposed study will further the approach illustrated in Figure 2 by developing a framework of mediating processes (maternal and child influences) that, based on propositions advanced in the literature, potentially explain the effect of changes in maternal depressive symptoms on children's school outcomes. Specifically, a mediational model would hypothesize that the effects of mother's changes in depressive symptoms on children's school functioning are mediated by three processes: (a) maternal behaviors of acceptance and consistent discipline, (b) the child's social competence, consisting of social skills of cooperation, assertion, and self-control, and (c) the child's emotional adjustment, including the presence of externalizing and internalizing problems. Figure 3 demonstrates the proposed explanatory model.

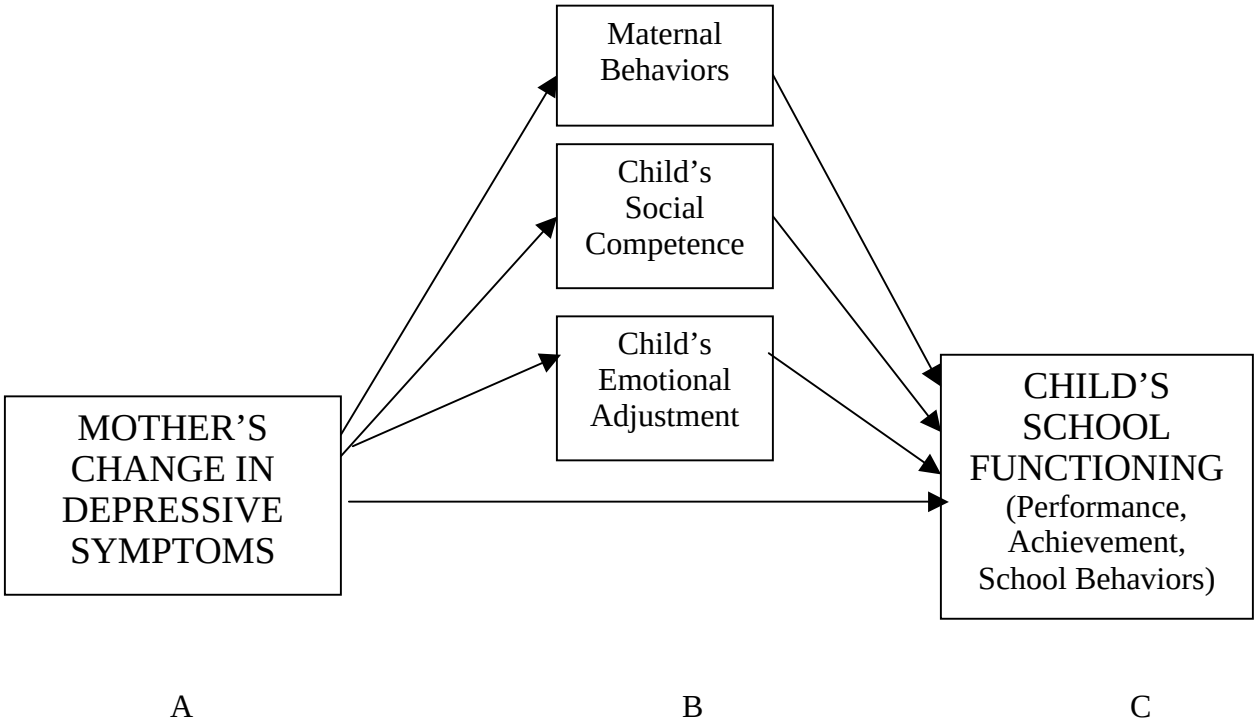

Figure 3. Proposed link from changes in maternal depressive symptoms to children's school functioning, via maternal behaviors, child's social competence, and child's emotional adjustment.

For the present study, data on children's school outcomes was collected 12 months (Time 2) after their mothers entered treatment. Because children's functioning was expected to change as a result of their mothers' change of depressive symptoms, it was expected that these effects would be more evident 12 months after the mothers enter the study, rather than at posttreatment (approximately 16 weeks after baseline). Thus, the present study utilized baseline and combined 8 and 10-month follow-up measures of maternal depressive symptoms, and 12-month measures of children's emotional adjustment, social competence, and mother's report of maternal behaviors. Changes of maternal depressive symptoms was defined operationally as the scores of depression at Time 2 when controlled for Time 1 scores of depression.

The present study also included measures of depressive symptoms at Time 1 and Time 2 of initially non-depressed mothers who participated in the study. Including non-depressed women and their children in this investigation had several advantages. First, symptoms of depression vary on a continuum in depressed women but they do so as well in non-depressed women. Including women with a wide range of symptoms and change of symptoms added more variability to the analysis of the model and thus, allowed for a more complete interpretation of the findings. Second, low-income women experience a variety of stressors that have been associated with depression, including single-parenting, poor health, and higher levels of financial stress (Heneghan et al., 1998). Thus, women identified as non-depressed at baseline (based on a cutoff score) were at high-risk of developing depression at a later time. Third, including non-depressed women into the study increased the overall sample size and allowed for greater statistical power when analyzing the mediational model. Baseline level of impairment was controlled in the present study to prevent erroneous interpretations about the relationships among the variables studied.

Table 1 illustrates the measures used for assessing maternal depression and children's outcomes. At baseline, 8 months, and 10 months, mothers' symptoms of depression were assessed. At 12 months, mothers reported on maternal behaviors, teachers completed questionnaires about the child's emotional adjustment and social skills, teachers completed measures of school functioning, and children completed an achievement test.

Table 1
Measures Used to Assess Variables by Source

Variable	Measure	Source
Maternal Depression	SIGH-AD/HAM-D[a]	Mothers
School Functioning	Academic Performance	Teachers
	Achievement (WIAT[b]) Reading Math	Children
	School Behaviors Behavior problems and services BASC[c] School Problems	Teachers
Emotional Adjustment	BASC[c] Externalizing Internalizing	Teachers
Social Competence	Social Skills Rating System Cooperation Assertion Self-Control	Teachers
Maternal Behaviors	CRPBI[d] Rejection Consistent Discipline	Mothers

[a]SIGH-AD/HAM-D: Structured Interview Guide of the Hamilton Rating Scale for Depression.
[b]WIAT: Wechsler Individual Achievement Test.
[c]BASC: Behavioral Assessment System for Children.
[d]CRPBI: Child's Report of Parental Behavior Inventory.

The outcomes proposed in this study have been examined in prior research as distinct measures of learning or academic standing. Keith and colleagues (1993, 1998) found that grades are potentially more sensitive to increases in effort and motivation than academic achievement. Thus, the mediational model for the study was tested separately for children's academic performance, achievement scores, and school behaviors. Specific research questions and related hypotheses follow.

Research Questions and Hypotheses

Research Question

Do maternal behaviors, children's social competence, and children's emotional adjustment mediate the effects of changes in maternal depressive symptoms on children's school functioning?

Hypotheses

1. Controlling for mother's baseline symptoms, change in maternal depressive symptoms, as assessed by the HAM-D, will no longer have a significant direct effect on child's academic performance, when the effects of maternal behaviors, child's social competence, and child's emotional adjustment, are included in the model.
2. Controlling for mother's baseline symptoms, change in maternal depressive symptoms, as assessed by the HAM-D, will no longer have a significant direct effect on child's achievement scores, when the effects of maternal behaviors, child's social competence, and child's emotional adjustment, are included in the model.
3. Controlling for mother's baseline symptoms, change in maternal depressive symptoms, as assessed by the HAM-D, will no longer have a significant direct effect on child's school adaptive behaviors, when the effects of maternal

behaviors, child's social competence, and child's emotional adjustment, are included in the model.

Rationale

Given that maternal depression has been linked with outcomes such as impaired parenting and poor socioemotional competence in children (Cummings & Davies, 1999; Downey & Coyne, 1990; Hammen, 1997), it is logical to explore how changes in symptoms of depression in women affect the school functioning of their children, via parenting and children's socioemotional competence. Thus, the purpose of this research was to determine whether and how changes in maternal depressive symptoms lead to changes in children's school functioning. The ultimate goal of this study was to determine whether maternal behaviors, children's social competence, and emotional adjustment partially or fully mediate the effects of change in maternal depressive symptoms on children's school outcomes. This proposed study was designed to bridge the gap in the literature regarding the effects of treating maternal depression on children of low-income families.

Method

Participants

Participants consisted of 106 mother-child dyads from the Washington DC area who participated in the 'We Care For Kids' study funded by the National Institutes of Mental Health from 1998-2003. These families participated in a partnering treatment study (Women Entering Care-WE CARE) that recruited depressed and non-depressed

low-income women identified through public sector family planning clinics, WIC clinics, and pediatricians' offices (for details about the partnering women's treatment study see Miranda et al., 2003).

In the sample of 106 dyads, 63% of women were depressed at baseline and 37% were not depressed at baseline. A demographic analysis of the families participating in the study revealed that the depressed mothers' mean monthly income was $1633 and that only 60% of these mothers had completed at least a high school education. Non-depressed mothers had a higher mean monthly income ($2238) and 72% had completed a high school education or higher. In terms of service use, 55% of the depressed mothers versus 54% of the non-depressed mothers participated in WIC and 54% and 41% of the depressed and non-depressed mothers, respectively, had children who were receiving free or reduced lunches at school. Depressed mother's mean age was 31.58 years (*SD* = 6.80) and their children, who were 51% female, ranged in age from 5 to 10 years. Non-depressed mothers did not differ in age from depressed mothers (*M* = 31.13, *SD* = 4.77) and their children were 56% female, ranging in age from 5 to 10 years. Women were predominately from minority groups (45% African American, 50% first-generation Latina immigrants, and 5% white). The Latina immigrants had been living in the United States for a mean number of 8.22 years (*SD* = 4.60). Of all families, 40% reported speaking Spanish in the home.

Measures

Maternal Depression

A structured interview guide (SIGH-AD, Williams, 1988) of the Hamilton Rating Scale for Depression (HAM-D; Hamilton, 1960) was administered to assess depression symptom severity in mothers at the baseline and 12-month assessments. For this study, six items that inquired about symptoms of atypical depression (see Appendixes A-B) were included and modeled on those in the Structured Clinical Interview for DSM-IV (First, 1996) regarding atypical features. Women were entered into the treatment study if they had a baseline score of 14 or above on the interview (Williams, 1988). Women scoring below the cutoff score of 14 were assigned to a comparison group of nondepressed women. The SIGH-AD was administered via telephone by trained interviewers. The Hamilton rating scale and SIGH-AD have been widely used in outcome studies of depression (see Williams, 1988) and have been found to be more sensitive to treatment outcomes than the Beck Depression Inventory (BDI) and the Self-Rating Depression Scale (SRDS) (Lambert, Hatch, Kingston, & Edwards, 1986). Telephone and in-person Hamilton rating scale administrations have been found to correlate highly, with an interclass correlation of .80 (Simon, Revicki, & Von Korff, 1991). Cronbach's alpha for the scale for the present study was .95.

Children's School Functioning

School functioning was derived from teacher ratings of children's academic performance, scores on the reading and math subtests of an achievement test, and on teacher ratings of school behaviors. Some studies suggest that children's performance,

academic achievement, and school behaviors are somewhat distinct variables, and thus, they were analyzed separately (Keith et al., 1993; Keith et al., 1998).

Academic performance. Academic performance in the present study was defined as children's current level of performance in different academic subjects, as reported by teachers during phone interviews at 12-month follow-up (see Appendix C). The ratings were scored on a 5-point scale ranging from 1 (*far below grade*) to 5 (*far above grade*). Cronbach's alpha for the scale was .80 for this sample.

School behaviors. School behaviors of children were rated by teachers using a 4-item scale of behavior problems and services in the school and using the School Problems composite scale from the Behavioral Assessment System for Children (BASC). A composite score was obtained, with high scores indicating less severe problems and low scores indicating more severe problems.

Teachers answered 4 questions indicating whether the child had failed or repeated a grade, been suspended or expelled, been identified as having a disability condition or received special education services, and whether the teacher had met with the child's parent because of an academic or behavioral problem (see Appendix D). These items were combined onto a single item indicating whether the child had experienced any of these problems. Cronbach's alpha for this composite for the present sample was .58.

The Behavior Assessment System for Children (BASC) Teacher Rating Scales (TRS; Reynolds & Kamphaus, 1992) is a scale designed to measure adaptive and problem behaviors in the school setting. The TRS assesses clinical problems in the broad domains of Externalizing Problems, Internalizing Problems, and School Problems (see Appendix E). In order to measure school behaviors in the present study, the School

Problems composite from the BASC was used. This composite offers a measure of academic difficulties and behaviors that are likely to interfere with achievement including problems of motivation, attention, and learning and cognition. In the study, the Teacher Rating Scales (TRS) was administered to teachers of all children ages 5-10. For each question about the child's behavior, the rater was given a choice of four responses, ranging from *never* to *always*.

TRS internal-consistency reliability scores for the composites ranged from the low to mid .90s for all age-levels in the general sample. Test-retest reliability for the TRS showed that median values ranged from high .80s to mid .90s (Reynolds & Kamphaus, 1992). The psychometric properties for the present sample yielded a Cronbach's alpha of .93.

Academic achievement. The Wechsler Individual Achievement Test (WIAT, 1992) is a comprehensive individually administered test for assessing the achievement of individuals aged 5 years to 19 years, 11 months. In this study, children were administered the test 12 months after their mothers entered treatment. The Comprehensive Battery consists of eight subtests but only the Basic Reading and the Mathematics Reasoning subtests were administered to the children in this study. The Basic Reading subtest consists of a series of pictures and printed words for assessing decoding and word-reading ability. The child responds by pointing to the response item or orally. The Mathematics Reasoning subtest examines problem solving, geometry, measurement, and statistics. The items are represented orally and visually, and the child responds orally or by pointing to a response (Spreen & Strauss, 1998).

The psychometric properties of the WIAT are well established (Spreen & Strauss, 1998). Split-half reliability coefficients were moderate to high (.69 to .98) and test-retest correlations are moderate to high in the standardization sample, an indicator of stability of scores (Spreen & Strauss, 1998). Construct validity of the WIAT comes from the pattern of intercorrelations among subtests. Reading subtests correlate more highly with each other than with the mathematics subtests. Scores on the WIAT correlate moderately with Wechsler IQ scores and there is substantial correlation (generally above .70) between scores on the WIAT and other individually administered achievement tests (Spreen & Strauss, 1998). Cronbach's alpha for the present sample was .78 and .75 for the reading and the mathematics subtests, respectively.

Emotional Adjustment

The Behavior Assessment System for Children (BASC; Reynolds & Kamphaus, 1992) was used to assess emotional disturbances and behavioral disorders. In this proposed study, the Teacher Rating Scales (TRS) were administered to teachers of all children ages 5-10. The BASC measures several aspects of children's behavior and personality in terms of both clinical and adaptive dimensions (see Appendix E). A composite of the Externalizing Problems and the Internalizing Problems subtests was used to measure children's emotional adjustment. For each question about the child's behavior, the rater is given a choice of four responses, ranging from *never* to *always*. Because high scores are indicative of greater maladjustment, the term "maladjustment" was used in the analysis for ease of interpretation.

The psychometric properties of the TRS are well established (see section 'School Behaviors'). The Internalizing Problems composite for the present sample yielded a

Cronbach's alpha of .79 while the Externalizing Problems composite generated an alpha of .96.

Although parent and child reports of emotional adjustment are available, they were not used for this study. Child ratings were not used due to a small sample of children responders. Because teacher ratings were used for the majority of child measures, mother ratings of child emotional adjustment were not used in order to maintain informant uniformity across measures of children's social, emotional, and educational outcomes. Gender differences for young children's expression of depressive symptoms are not expected, as they have not been noted in previous studies of pre-adolescent depressed children (Birmaher et al., 1996; Kazdin, 1994).

Social Competence

The Social Skills Rating System (SSRS; Gresham & Elliot, 1990) is a questionnaire designed to obtain information on children's social skills, problem behaviors, and academic performance from parents, teachers, and children themselves (see Appendix F). For the purposes of this study, only the social skills subdomain was used, as reported by teachers. In the social skills scale, all raters can assess common core behaviors from the subdomains of cooperation, assertion, and self-control. Raters are asked to state how often a social behavior has occurred in the past three months: *never*, *sometimes*, or *very often*. The questionnaire takes between 10 and 25 minutes to complete.

SSRS internal-consistency reliability scores for the teacher-reported Social Skills composite range from .93 to .94 for all age-levels in the general standardization sample. Test-retest reliability for the same SSRS scale was .85 (Gresham & Elliot, 1990). For the

present sample, Cooperation, Assertion, and the Self-Control subscales had alphas of .91, .87, and .89, respectively.

Criterion-related validity of the SSRS has been established by selecting criterion measures theoretically believed to be predictable from SSRS scores. The SSRS and the Social Behavior Assessment (SBA) have moderate to high correlations, as predicted due to the similarity of behaviors assessed. The SSRS and the CBCL have been found to be negatively correlated, providing further evidence of the criterion-related validity of the SSRS, as the social skills subscales appear to measure behaviors opposite to problem behaviors (Gresham & Elliot, 1990).

Maternal Behaviors

The Child's Report of Parental Behavior Inventory (CRPBI; Schaefer, 1965) was designed to measure a large range of parenting behaviors. For the study, the subtests of Rejection, Acceptance, and Consistent Discipline were utilized. Rejection and acceptance were highly correlated and combined into one variable of acceptance/rejection. In the CRPBI, the respondent rates each item as "*like*," "*somewhat like*," or "*not like*" the parent (with scores ranging from 3 to 1). Mothers rated themselves on these indicators of parenting or maternal behaviors. The CRPBI was completed by mothers as part of a mail survey containing other study measures. The measure took approximately 10 minutes to complete. For the present sample The Cronbach's alpha for the Acceptance/Rejection composite was .76 and for Consistent Discipline the alpha was .84 (see Appendix G).

Procedure

Recruitment of Participants

Recruitment Procedures

Women and their children were recruited from the 'We Care' Study for the Treatment of Depression in Low Income Women. In order to test the hypotheses using independent observations, only one child between the ages of 5 and 10 years was examined per family. In the case that a family had more than one child in the age range studied, one was selected for inclusion in the present study based on predetermined selection criteria. In such a case, the child whose birthday was closest to the baseline assessment was selected.

At entrance into the women's study, clinicians introduced the child component using a structured script. The clinicians identified eligible children and permission was granted for child interviewers to call the mother and schedule the baseline assessment. A child study interviewer contacted eligible mothers, described the purpose of the child study, and scheduled the baseline assessment. Mothers granted verbal consent during this telephone call but it was not until signed written consent was obtained at the beginning of the baseline assessment that measures with the mother and the child were actually administered. Children were also read and asked to sign assent forms during the baseline interview (see Appendixes H-K). Consent and assent forms included permission to collect data on children's outcomes (e.g., family outcomes, parent-child interactions) not addressed in the present study. Figure 4 illustrates the study procedures and assessment points.

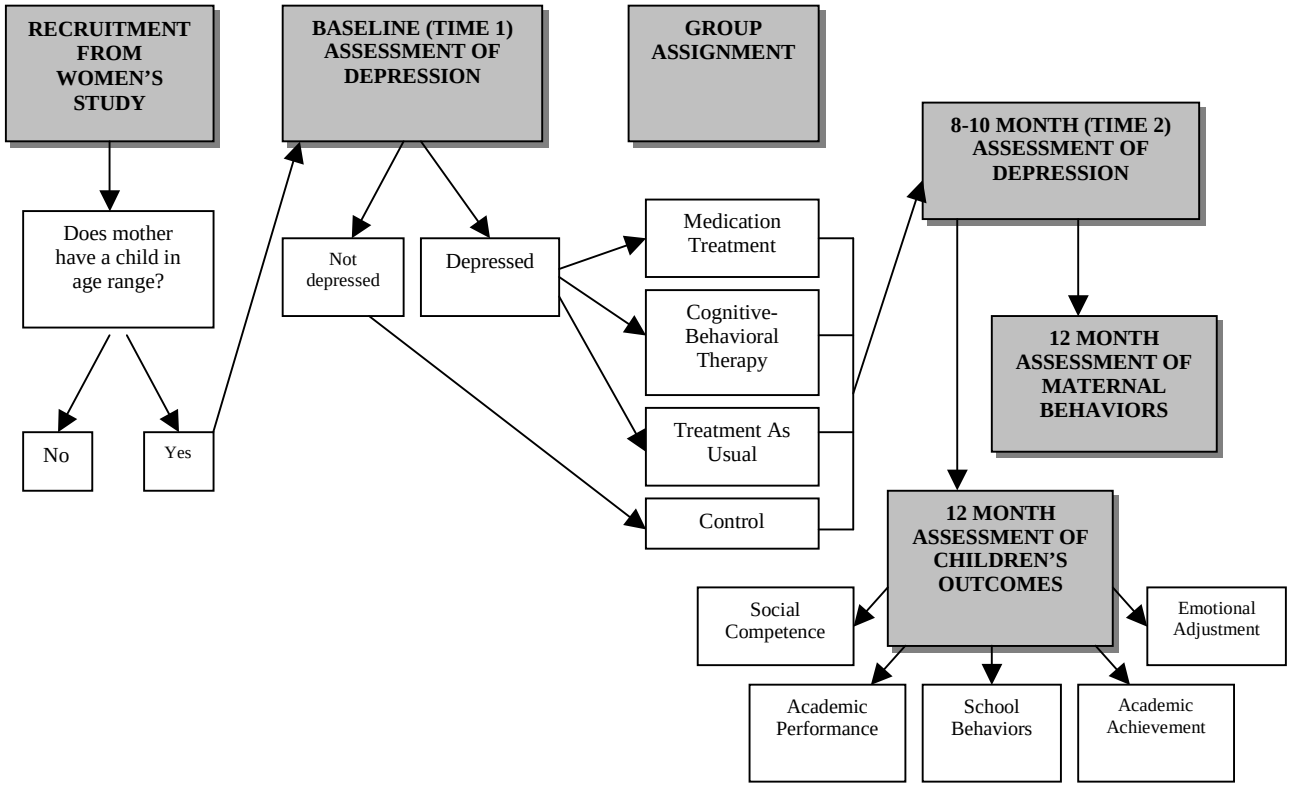

Figure 4. Overview of Study Procedures and Assessment Points

During the baseline assessment with the mother and the child, staff identified a teacher of the child. With the mother's permission, the interviewers conducted teacher phone interviews concerning the child's academic performance, school behaviors, and academic achievement. The teacher interviews were conducted only after the teacher received a copy of the mother's consent to contact the teacher and the teacher provided informed consent to participate (see Appendix K). When describing the study to teachers, no information was disclosed about the mother's depression status. Instead, teachers were told that the mother and child were part of a research project about how children think and feel.

Data Collection

Training of Interviewers

Interviewers were graduate students from Clinical Psychology programs in the Baltimore-Washington area and from the School of Public Health at the Johns Hopkins University. Interviewers received weekly training and supervision by the Principal Investigators and a consulting psychiatrist in the administration of the measures, clinical interviews (KSADS, not presented here) with mothers and children, and in handling concerns about suicidal and homicidal ideas, and suspicions of abuse. A 60-page training manual was developed and distributed to the interviewers. Interviewers were expected to demonstrate competency of the different measures and procedures through role-plays and during administration of the measures in a pilot phase of the study.

Baseline Assessment

The assessment of women's depressive symptoms occurred in two phases. First, women were screened for major depressive disorder (MDD) with the SIGH-AD/HAM-D while they were at a service setting. Women who were eligible based on scores of screening and pre-specified inclusion and exclusion criteria (see Miranda et al., 2003) were then contacted by telephone to confirm the diagnosis of MDD via a semi-structured diagnostic interview.

Prior to or at the beginning of the women's treatment for depression, two interviewers from the child component visited the mother and child in their home. Interviewers worked with the mother and the child separately. During this initial assessment, mothers were reminded that the entire assessment might take up to 3 hours to complete (including measures and interviews not used for this study). During the baseline assessment, the child completed the WIAT, and mothers completed the CRPBI as part of

a mail survey. Consent to contact a teacher who knows the child best was obtained during this initial assessment.

If the mother consented for the interviewers to contact the child's teacher, the interviewer sent the teacher an introductory letter and a copy of the teacher consent form signed by the mother within one week of the mother's interview. One week after sending that letter, a phone interview was scheduled. During the teacher interview, teachers reported on the child's academic performance and school behaviors of the child. Teachers also rated the child's social skills and emotional functioning. While these procedures with mothers, children, and teachers were followed at baseline to assess children's outcomes, the present study is based on the results of the outcomes collected through similar procedures at 12 months follow-up.

Assignment to Treatment

Soon after or immediately before the baseline assessment, depressed mothers were randomly assigned to one of three treatment conditions: Group cognitive behavioral therapy (GCBT), medication (Paroxetine), or treatment as usual (active referral to community mental health resources). Treatment lasted an average of 15 weeks.

Follow-up Assessment

Mothers's symptoms of depression were assessed by telephone every month during and after the intervention to assess for change of severity of symptoms of depression. For the present study, the mother's depression scores at 8 and 10 months, controlling for their baseline depression scores, were used to test the mediational model. At 12 months of the baseline assessment, the same procedures were followed with teachers and children as those for the baseline assessment. Measures were given to the

participating children and their teachers. Assessment with the mothers of maternal behaviors (CRPBI) were conducted by mail, assessment of children were conducted in the home, and teachers were interviewed by phone.

CHAPTER 4: RESULTS

This results section is divided into the following subsections: a) preliminary analyses, b) primary analyses of model mediation, and c) secondary analyses. Preliminary analyses consisted of data reduction methods aimed to reduce the number of parameters in the model. This method was necessary to conduct the primary analyses of the hypotheses given the sample size of the study. Next, because the study variable of maternal depressive symptoms was measured at different assessment points, computation of a change score was conducted. As is generally necessary in longitudinal studies in which subject attrition may be common, preliminary analyses also focused on the statistical treatment of missing data. Finally, preliminary analyses were conducted to compare depressed and non-depressed women and their children on a range of sociodemographic characteristics. Primary analyses were conducted using Path Analysis to test the hypotheses of mediation. Path analysis provided regression coefficients for the direct and total effects of changes in maternal depressive symptoms on children's school outcomes and tested the indirect effects or mediation of changes in maternal depressive symptoms on children's school functioning. Secondary analyses were then completed to further explore the data based on the preliminary and primary analyses.

Preliminary Analyses

Computation of Composite Scores

In order to analyze a full mediational model with this sample, scaled scores or composites were created for some of the variables so as to reduce the number of parameters in the model. First, the variable School Behaviors was a composite of both teacher ratings of school problems and services and the School Problems scale of the TRS (BASC). This composite was obtained by transforming the raw scores of both measures to standardized scores and then subtracting the transformed scores of School Problems from the School Problems and Services to arrive at a composite of positive school behaviors. Second, the variable Emotional Adjustment was a composite based on averaged standard scores of the teacher ratings of children on the Internalizing and Externalizing subscales of the TRS. Third, the variable Maternal Behaviors was based on the averaged standard scores of mother ratings of rejection (reversed) and consistent discipline. Fourth, Academic Achievement was a composite based on averaged standard scores of the child-completed WIAT reading and math subtest scales. Although there are three dimensions of School Functioning (academic performance, academic achievement, and school behaviors) they are distinct aspects of school functioning and thus a separate model was analyzed for each dimension.

Change in Maternal Depressive Symptoms

In order to determine change in maternal depressive symptoms, SIGH-AD scores at 8 and 10 months (Time 2) were averaged. The effect of baseline scores (Time 1) were

controlled by regressing Time 2 scores on Time 1 scores and saving the residuals, which represent Time 2 depressive symptoms adjusted for Time 1 symptoms. The resulting score was used to denote change in the form of a continuous variable rather than a dichotomous variable. An advantage of this method is that it preserved the richness of the data in exploring relationships between mothers' depressive symptoms and measures of functional impairment in children. In addition, this approach accounted for large and small differences of change of mothers' depressive symptoms that may be associated with children's functioning and that would not be reflected in dichotomous methods of data collection and analysis.

Missing Data

Attrition is a significant problem in any study in which participants are repeatedly assessed. Because repeated measurements on an individual tend to be correlated, it is recommended to use procedures that use all the available data for each participant, because missing information can then be partially recovered from earlier data (Schafer & Graham, 2002). Longitudinal modeling by Maximum Likelihood (ML) was used to handle missing data in the present study because it is a highly efficient way to use the available data. ML was computed through an EM algorithm. EM solves a difficult incomplete-data estimation problem by iteratively solving an easier complete-data problem. An advantage of ML is that it is fairly well-understood and robust to violations of non-normality of the variables used in the analysis. It is clearly superior to listwise, pairwise, and mean substitution methods of handling missing data in most cases (Schafer & Graham, 2002).

Demographic Characteristics

Families of depressed and non-depressed mothers were compared on a number of sociodemographic characteristics. In order to determine if depressed and non-depressed women and their families were associated with any of these characteristics, chi-square statistics and t-tests were conducted for categorical and continuous variables, respectively. Depressed and non-depressed women and their children were comparable in terms of age, gender, education, ethnicity, number of years living in the United States, and participation in free or reduced lunch programs and WIC.

Path Analysis

Table 2 presents summary data and correlations for the variables used in this research. The mediational model was evaluated through a path analysis. The Amos software program (Arbuckle & Wothke, 1999) allows a series of hypothesized standardized regression coefficients to be solved simultaneously for paths between variables. The statistical significance of mediation was tested with all mediators in the model using bootstrap methods (Shrout & Bolger, 2002), and separately with individual mediators using the Sobel test (Baron & Kenny, 1986).

For mediation to be established, Baron and Kenny (1986) proposed an initial condition that the independent variable or IV (maternal depressive symptoms) must be significantly associated with the dependent variables or DVs (academic performance, academic achievement, and school behaviors). Although mediation research has traditionally adhered to this condition, Shrout and Bolger (2002) have questioned the

necessity to test this condition when there is a belief that the effect size is small or suppression is a possibility. In the present study, small effect sizes were expected, and because of the small sample size, it was expected that these initial associations could be statistically non-significant. Therefore, the present study conducted mediational analyses even if there was no significant association between the IV and the DVs.

Because the path model is just-identified, meaning that the number of parameters is equal to the number of correlations, no fit indices were calculated. Consequently, mediation was evaluated using the statistical significance tests of the indirect effects in the path analysis.

Table 2
Means, Standard Deviations, and Correlations Among the Mother and Child Variables

	1	2	3	4	5	6	7	8
Mean	11.33	.00	2.44	49.80	101.62	2.86	97.11	.0032
SD	9.16	5.50	.38	8.34	15.78	.84	12	1.75
1. Maternal Depression Time 1	1							
2. Maternal Depression Time 2	.000	1						
3. Maternal Behaviors	-.180	-.288	1					
4. Emotional Maladjustment	.171	.016	-.039	1				
5. Social Competence	-.177	.038	.109	-.579	1			
6. Academic Performance	-.039	.035	.070	-.215	.330	1		
7. Academic Achievement	-.255	.170	-.025	-.106	.145	.442	1	
8. School Behaviors	-247	.063	.080	-.543	.565	.463	.509	1

Note. The values are based on estimated means (*EM*) used to account for missing data. n = 106

Primary Analyses

The primary analyses are based on the test of the hypotheses of mediation. Path Analysis was used because it not only focused on direct effects (as multiple regression), but also on indirect and total effects. First, the significant findings for the path models, with particular focus to direct and total effects, will be presented. Second, the test of the study hypotheses of mediation will be presented.

Significance of Path Models

Model 1: Academic Performance

Direct, indirect, and total effects were examined for the model of children's academic performance (see Table 3 for the path coefficients corresponding to the effect of maternal depressive symptoms on academic performance). Direct effects were analyzed using standardized weights for the paths among variables. As seen in Figure 5, there was a statistically significant path from changes in maternal depressive symptoms at Time 2 to maternal behaviors. For every standard deviation (*SD*) improvement in mothers' level of depression, there was an improvement of .29 *SD* of maternal behaviors. Similarly, a significant direct path from child's social competence to academic performance indicated that for every *SD* increase in social competence, there was a .30 *SD* increase in child's academic performance, as reported by teachers. Although a direct path was not found to be statistically significant from changes in maternal depressive symptoms at Time 2 to child's academic performance, it was hypothesized that an indirect effect would exist from changes in maternal depression at Time 2 to child's

academic performance. However, the indirect effect was not statistically significant. Total effects are the sum of direct and indirect effects. Changes in maternal depressive symptoms at Time 2 had a statistically significant total effect on maternal behaviors (*SD*= -.29, *SE*= .09).

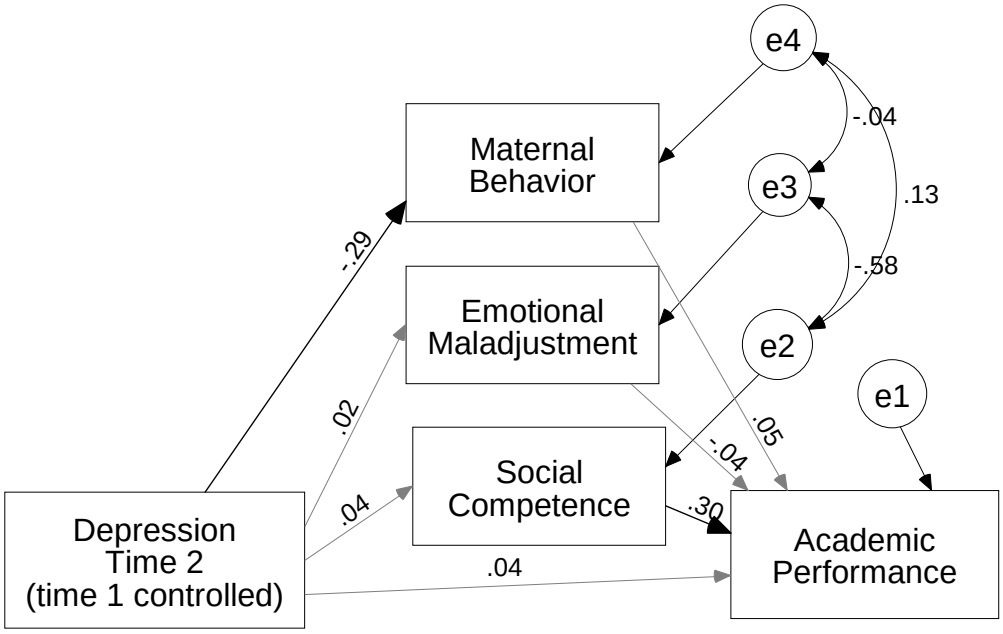

Figure 5. The mediated effects of maternal depressive symptoms at Time 2 on children's academic performance at 12 months follow-up.

Table 3
Standardized Direct, Indirect, and Total Effects of Maternal Depressive Symptoms at Time 2 (8-10 Months After Treatment Intake) on Outcome Variables

	Outcome Variables		
Maternal Depressive Symptoms (Time 2)	Academic Performance	Academic Achievement	School Behaviors
Direct effect	.04	.17*	.07
	(.09)	(.09)	(.08)
Indirect effect	.00	.00	-.01
	(.05)	(.04)	(.07)
Through Maternal Behaviors[a]	-.01	.00	-.01
Through Social Competence[a]	.01	.00	-.01
Through Emotional Maladjustment[a]	.00	.00	-.01
Total effect	.04	.17*	.06
	(.09)	(.09)	(.09)

Note. Values in parentheses are standard errors (*SE*)
[a]Statistical significance calculated with Sobel Test for each mediator variable
** $p < .05$ * Approaching significance

Model 2: Academic Achievement

Direct, indirect, and total effects were calculated for the model of children's academic achievement (see Table 3 for the path coefficients from maternal depressive symptoms to children's achievement scores). As shown in Figure 6, maternal depressive symptoms had a statistically significant direct effect on maternal behaviors. For every standard deviation (*SD*) decrease in maternal depression scores, appropriate maternal behaviors increased by .29 *SD*. Maternal depressive symptoms also had a strong direct

effect on children's academic achievement scores, but the effect failed to reach statistical significance.

No indirect effect was found from changes in maternal depressive symptoms at Time 2 to academic achievement in children. Total effects were statistically significant from changes in maternal depressive symptoms at Time 2 to maternal behaviors (total effect = -.29 *SD*; *SE*=.09). Total effects from maternal depressive symptoms at Time 2 to children's academic achievement approached statistical significance (see Table 3).

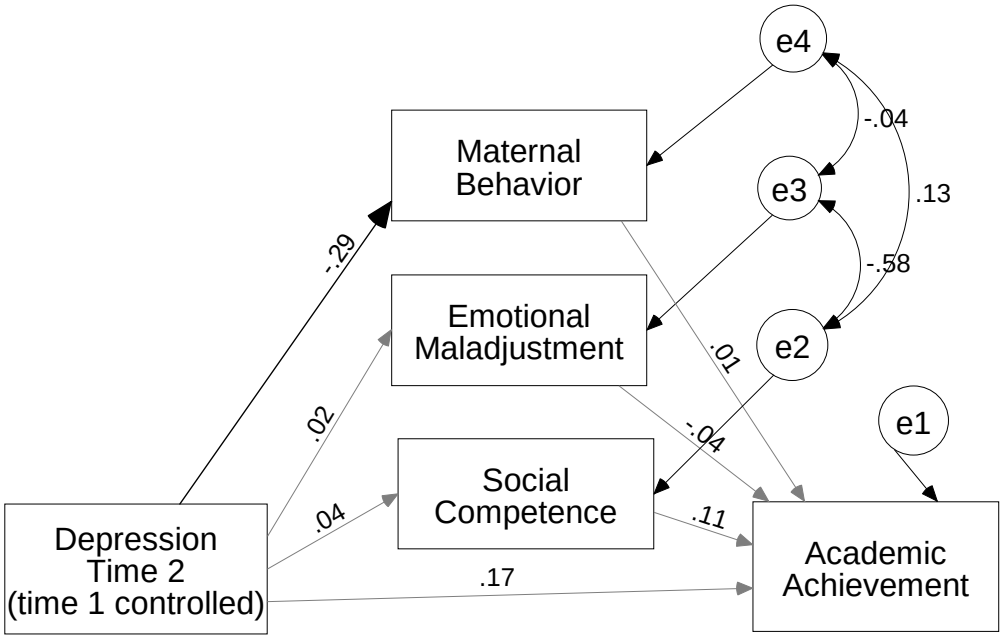

Figure 6. The mediated effects of maternal depressive symptoms at Time 2 on children's academic achievement scores at 12 months follow-up.

Model 3: School Behaviors

Direct, indirect, and total effects were calculated for the model of school behaviors (see Table 3 for the path coefficients from maternal depressive symptoms to children's school behaviors). As seen in Figure 7, and as in previous models, change in maternal depressive symptoms at Time 2 had a direct effect on maternal behaviors. For every standard deviation (*SD*) decrease in maternal depression scores, there was a .29 *SD* increase in appropriate maternal behaviors. A direct effect was also found from children's social competence to children's school behaviors. For every *SD* increase in social competence, there was a .37 *SD* increase in appropriate school behaviors. In addition, there was a direct effect from children's emotional maladjustment to school behaviors. For every *SD* decrease in emotional maladjustment, there was a .33 *SD* increase in appropriate school behaviors.

No indirect effects were found. Total effects were found for the following paths: maternal depressive symptoms to maternal behaviors, social competence to school behaviors, and emotional maladjustment to school behaviors. Total effects are the sum of direct and indirect effects. Because there were no indirect effects, these total effects were statistically significant because the direct effects were statistically significant.

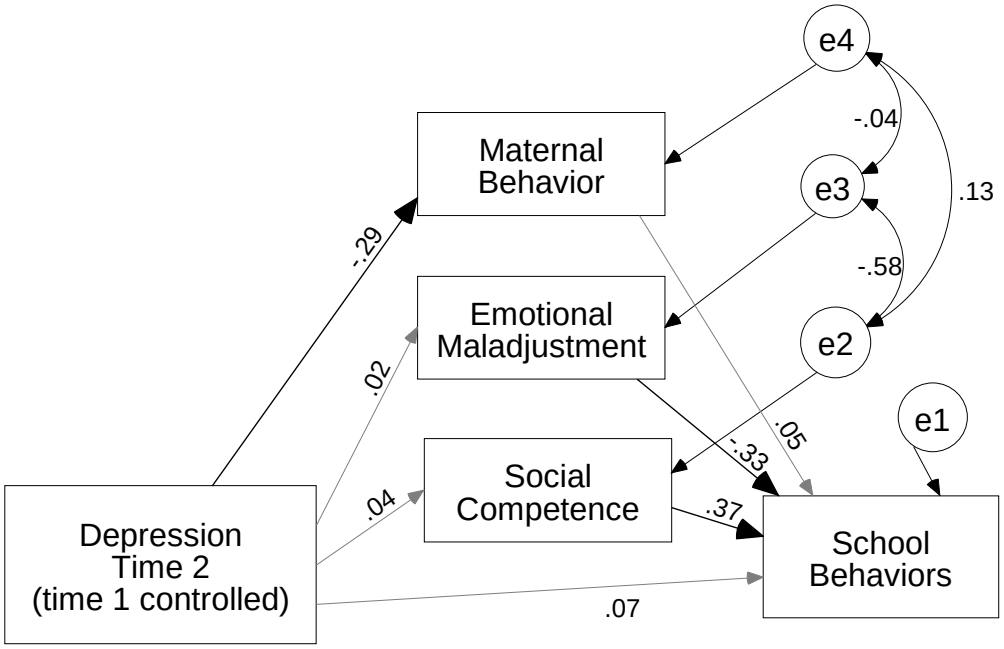

Figure 7. The mediated effects of maternal depressive symptoms at Time 2 on children's school behaviors at 12 months follow-up.

Mediational Analyses

Hypothesis 1: Academic Performance

The primary tests of mediational analyses are indirect effects. Thus, hypothesis 1 proposed that maternal depressive symptoms at time 2 would have statistically significant indirect effects on children's academic performance through maternal behaviors, children's social competence, and children's emotional maladjustment. As shown in Figure 5 and Table 3, although maternal depressive symptoms at Time 2 had a direct effect on maternal behaviors, it did not have a statistically significant direct effect on the other mediators. Likewise, maternal depressive symptoms had no statistically significant

indirect effect on academic performance through the presumed mediating variables. Thus, no mediation was found among variables.

Hypothesis 2: Academic Achievement

In Hypothesis 2 it was proposed that maternal depressive symptoms at Time 2 would have statistically significant indirect effects on children's academic achievement through maternal behaviors, children's social competence, and children's emotional maladjustment. To test hypothesis 2, indirect effects were calculated. As shown in Figure 6 and Table 3, although maternal depressive symptoms had a relatively meaningful direct effect on children's academic achievement, it had no statistically significant indirect effect on children's academic achievement through the presumed mediating variables. Thus, no mediation was found.

Hypothesis 3: School Behaviors

Hypothesis 3 proposed that maternal depressive symptoms at Time 2 would have statistically significant indirect effects on children's school behaviors through maternal behaviors, children's social competence, and children's emotional maladjustment. To test hypothesis 3, indirect effects were calculated. As shown in Figure 7 and Table 3, no indirect effects were found to be statistically significant from maternal depressive symptoms to children's school behaviors through the presumed mediating variables. Thus, no mediation was found between maternal depressive symptoms at Time 2 and children's school behaviors.

Secondary Analyses

Secondary analyses were conducted to provide additional information in the absence of substantive findings from the primary analyses. The full models previously examined were re-analyzed with maternal depressive symptoms at *Time 1* (baseline) as the independent variable, rather than change in symptoms at Time 2. It was expected that Time 1 symptoms of depression in women might predict children's school outcomes 12 months later because previous studies have found support for the long-term impact of maternal depression on children's functioning. The goal of these secondary analyses was to determine if maternal depressive symptoms at Time 1 affected children's school outcomes at 12 months follow-up.

Model 1: Academic Performance

Table 4 shows the path coefficients between maternal depressive symptoms at Time 1 and children's academic performance. For specific mediators, Figure 8 shows that direct effects from children's social competence to academic performance were statistically significant. For every standard deviation (*SD*) improvement in children's social competence, there was a .31 *SD* improvement in children's academic performance. Maternal depressive symptoms at Time 1 had marginal direct effects on children's social competence, emotional maladjustment, and maternal behaviors at 12 months. For every *SD* increase in maternal depressive symptoms at Time 1, there was a .18 *SD* decrease in appropriate maternal behaviors, a .17 *SD* increase in children's emotional maladjustment, and a .18 *SD* decrease in children's social competence at 12 months follow-up. Thus,

there was a trend for maternal depression at Time 1 to be associated with impairment in parenting and children's socio-emotional functioning 12 months later.

An indirect effect from maternal depressive symptoms at Time 1 to children's academic performance at 12 months was meaningful, but failed to reach statistical significance. At best, these findings suggest a trend for maternal depressive symptoms at Time 1 to indirectly affect children's academic performance through the proposed mediating variables.

Table 4
Standardized Direct, Indirect, and Total Effects of Maternal Depressive Symptoms at Time 1 (Treatment Intake) on Outcome Variables.

	Outcome Variables		
Maternal Depressive Symptoms (Time 1)	Academic Performance	Academic Achievement	School Behaviors
Direct effect	.03	-.25**	-.13
	(.09)	(.09)	(.08)
Indirect effect	-.07*	.00	-.12**
	(.05)	(.03)	(.06)
Through Maternal Behavior[a]	-.01	.01	.00
Through Emotional Maladjustment[a]	-.01	.00	.05*
Through Social Competence[a]	-.06*	-.02	-.06*
Total effect	-.04	-.26**	-.25**
	(.09)	(.09)	(.09)

Note. The values in parentheses are standard errors.
[a]Statistical significance calculated with Sobel Test for each mediator variable
** $p < .05$ * Approaching significance

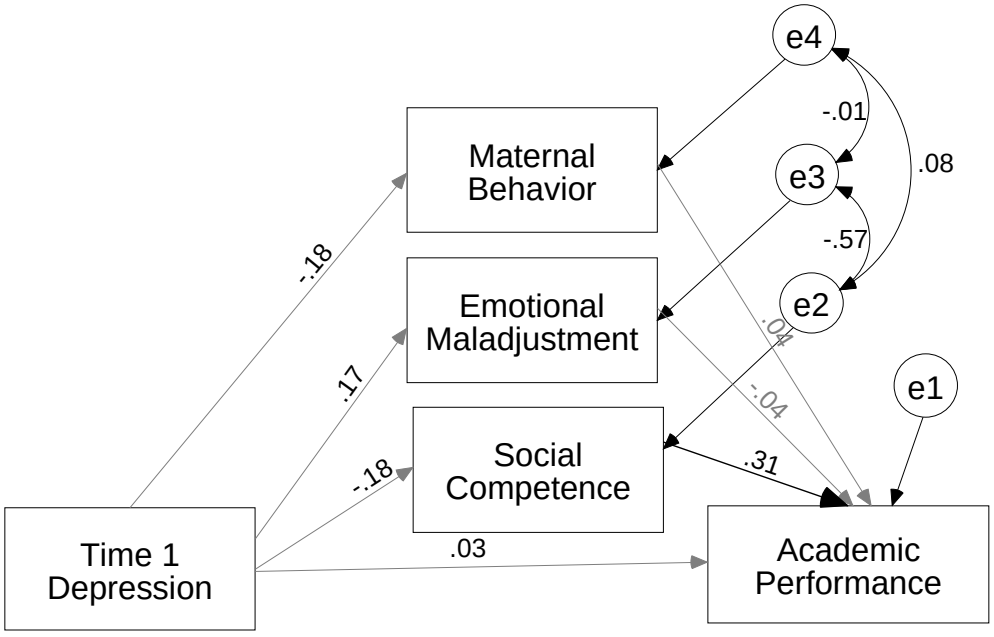

Figure 8. The mediated effects of maternal depressive symptoms at Time 1 on children's academic performance at 12 months follow-up.

Model 2: Academic Achievement

With regards to the second dependent variable, academic achievement, a different pattern of associations was observed. As shown in Table 4 and Figure 9, maternal depressive symptoms at Time 1 had a statistically significant direct effect on children's academic achievement at 12 months follow-up. Thus, for every *SD* increase in maternal depressive symptoms at Time 1, there was a .25 *SD* decrease in children's academic achievement 12 months later. Figure 9 illustrates weak effects from maternal behaviors, children's social competence, and children's maladjustment to academic achievement. Although maternal depressive symptoms at Time 1 had a statistically significant effect on children's academic achievement 12 months later, no indirect effects were found through

the proposed intervening variables. In other words, because maternal depressive symptoms had meaningful but nonsignificant effects on the mediating variables and the intervening variables had weak effects on children's academic achievement, it was not possible to support mediation for this model.

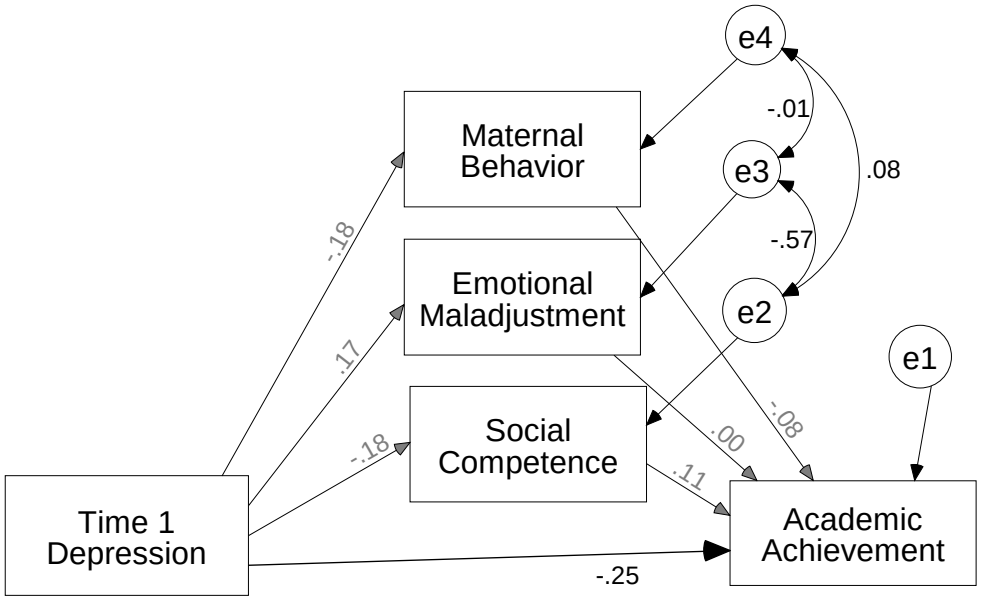

Figure 9. The mediated effects of maternal depressive symptoms at Time 1 on children's academic achievement scores at 12 month follow-up.

Model 3: School Behaviors

For the third dependent variable, school behaviors, a pattern similar to academic performance was observed. Table 4 includes the direct, indirect, and total path coefficients from maternal depressive symptoms at Time 1 to children's school behaviors at 12 months follow-up. For the effects of specific mediators, Figure 10 illustrates that children's social competence and children's emotional maladjustment had statistically

significant direct effects on children's school behaviors. Thus, for every *SD* increase in social competence, there was a .36 increase in appropriate school behaviors. For every *SD* increase in children's emotional maladjustment, there was a .31 decrease in children's school behaviors. There were meaningful but non-significant direct effects from maternal depressive symptoms at Time 1 to children's emotional maladjustment, social competence, school behaviors, and maternal behaviors. As shown in Table 3, total effects were similar to the direct effects found except that the total effect of maternal depressive symptoms at Time 1 on children's school behaviors at Time 2 was statistically significant. The indirect effect of maternal depressive symptoms at Time 1 on children's school behaviors was statistically significant. These findings suggest that maternal depressive symptoms had indirect effects on children's school behaviors through the proposed mediating variables.

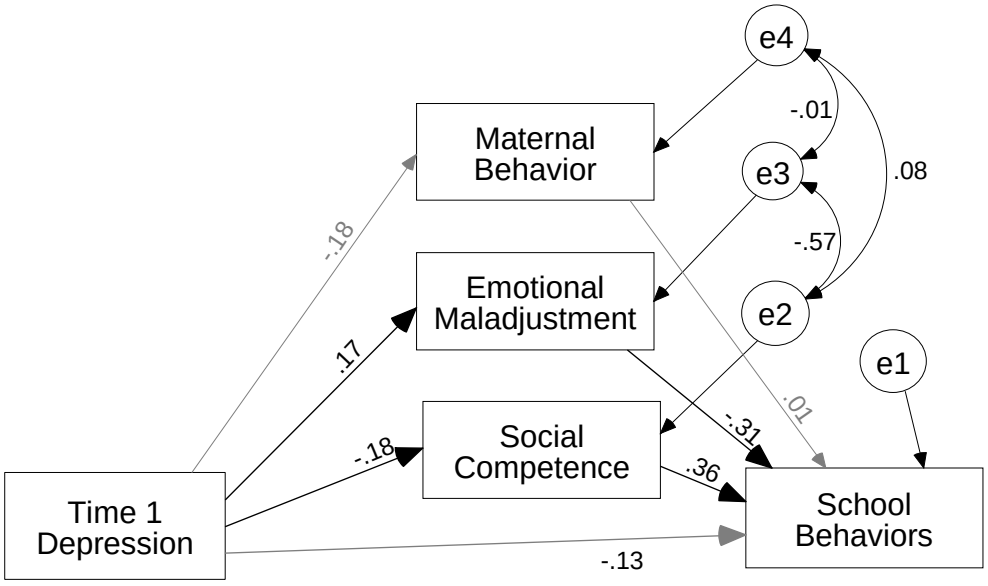

Figure 10. The mediated effects of maternal depressive symptoms at Time 1 on children's school behaviors at 12 months follow-up.

Mediational Analysis of Secondary Models

For the first dependent variable, academic performance, mediational effects approached statistical significance. The effects of maternal depressive symptoms at Time 1 on children's academic performance appeared to diminish when maternal behaviors, children's emotional maladjustment, and particularly children's social competence, were taken into consideration. When individual mediating variables were tested, social competence was the only variable that approached statistical significance. At best, these results suggest a trend for social competence to mediate the effect of mothers' depressive symptoms on academic performance. See Figure 8 and Table 4 for specific path coefficients.

The second dependent variable, academic achievement, showed a different pattern. No mediation was found in this model despite the direct effect found from maternal depressive symptoms at Time 1 to children's academic achievement 12 months later. See Figure 9 and Table 4 for specific path coefficients.

For school behaviors, the third dependent variable, overall mediation was tested and found to be statistically significant. However, when mediation was tested separately for each mediating variable, only social competence and emotional maladjustment appeared to have a meaningful but nonsignificant mediating role in the model (see Table 4). This discrepancy may be due to the fact that different tests were used (Bootstrap versus Sobel) to calculate statistical significance, and that overall mediation is based on the additive effects of all mediating variables.

Thus, the findings suggest that maternal depressive symptoms at Time 1 have an indirect effect on children's school behaviors, and that mediation appears to be best accounted (albeit nonsignificantly) by children's social competence and emotional maladjustment. Maternal depressive symptoms at Time 1 have a mediated effect on children's school behaviors. More specifically, depressive symptoms to some extent affect children's social competence and emotional maladjustment 12 months later, which in turn affect children's school behaviors. The effects of maternal depressive symptoms at Time 1 on children's later school behaviors are tentatively explained by its effects on children's later social competence and emotional maladjustment. See Figure 10 and Table 4 for specific path coefficients.

CHAPTER 5: DISCUSSION

The present study examined the role of maternal behaviors, children's social competence, and children's emotional maladjustment in mediating or explaining the effects of changes in maternal depressive symptoms on children's academic performance, academic achievement, and school behaviors. This discussion begins with a brief summary of the findings. Further interpretation of findings is depicted in three sections, where each hypothesis is reviewed along with secondary analyses. Next, the theoretical relevance of the findings is discussed in the context of the current literature, followed by proposed clinical and educational implications. In the last section, the limitations of the study are addressed and recommendations are made for future research.

Summary of Findings

Results of the study indicate that changes in maternal depressive symptoms assessed 8-10 months after study entry have a significant effect on mothers' reports one year after study entry of parenting behaviors of consistent discipline and rejection but do not have a significant effect on teachers' reports of children's socio-emotional and educational outcomes at one year. Women whose depression scores decreased or remained low, reported greater consistent discipline and less rejection towards their children than did those with significant depression over the course of the study. However, even those children continued to have difficulties in social competence, emotional adjustment, academic performance, academic achievement, and school behaviors as reported by teachers. Of all the variables studied, children's academic performance was

primarily influenced by children's social competence; school behaviors were primarily influenced by children's social competence and emotional maladjustment; and standardized academic achievement scores did not appear to be significantly influenced by any of the parent or child variables studied in this group of children with depressed mothers. These findings suggest that children's performance and behaviors in the classroom are closely linked to their social and emotional functioning. Academic achievement is influenced by factors such as cognitive ability, prior learning, and quality of education, in addition to children's socio-emotional functioning.

Because change in maternal depressive symptoms had a significant effect on parenting behaviors but nonsignificant effects on children's educational outcomes, secondary analyses were conducted to examine alternative models of explanation. Given the vast majority of literature documenting the long-term impact of maternal depression on children, secondary analyses focused on examining the role of the mother's initial level of impairment. The analysis revealed that the mothers' *initial* level of impairment affected children's functioning one year later. First, there was a meaningful but nonsignificant trend for initial levels of maternal depressive symptoms to influence children's teacher-rated academic performance one year later, which was mediated by children's social competence. Second, there was a meaningful but nonsignificant trend for initial levels of maternal depressive symptoms to influence children's school behaviors one year later as mediated by children's social competence and emotional maladjustment. Third, initial levels of maternal depressive symptoms significantly affected children's academic achievement one year later. This effect was not explained or

mediated by any of the other variables studied: social competence, emotional adjustment, and maternal behaviors.

In summary, the present study does not find support for any of the proposed research hypotheses of mediation between changes of maternal depressive symptoms and children's school functioning. However, it offers a possible explanation for the lack of substantive findings. As a result, the study identifies potentially important variables in the prediction of children's school functioning. In the following section, the findings of each hypothesis and secondary analysis will be examined more fully.

Discussion of the Findings of Each Hypothesis

Discussion of Hypothesis 1: Academic Performance

It was hypothesized that the direct effects of changes in maternal depressive symptoms over 8-10 months on children's academic performance would decrease once maternal behaviors, children's social competence, and children's emotional maladjustment were included in the model. Therefore, it was proposed that maternal behaviors, children's social competence, and children's emotional maladjustment would mediate or explain the effects of changes in maternal depressive symptoms on children's teacher-rated academic performance at one year of study entry. For this model, it was found that maternal behaviors, children's social competence, and children's emotional maladjustment did not explain or mediate the effects of changes in maternal depression on children's academic performance. Because no mediation was found, this hypothesis was rejected.

The pattern observed in this model indicates that changes in maternal depressive symptoms at 8-10 months of study entry predicted maternal behaviors, but not children's social competence, emotional adjustment, and academic performance. Similarly, there was a significant direct effect from children's social competence to academic performance. Thus, if social competence, as composed of social skills of cooperation, assertion, and self-control with peers and adults, is compromised in children, it will probably lead to a decline in the quality of children's schoolwork. Furthermore, academic performance appears to be more influenced by children's social skills and peer interactions than by emotional adjustment.

The lack of indirect or mediated effects observed for this hypothesis may be due to a variety of reasons. First, there was no direct effect of the change in maternal depressive symptoms and children's academic performance. Thus, it is unlikely that the maternal behaviors, children's social competence and emotional maladjustment measures would cause the addition of the relationship between changes in maternal depressive symptoms and children's academic performance to become significant, indicating that one of these variables intervened between the two. It is always possible that a larger sample size would show evidence of these effects. Second, changes in maternal depressive symptoms are likely to have proximal or more direct effects on the women's parenting behaviors and distal effects on children's functioning. Because there are fewer intervening variables between women's symptoms of depression and their parenting behaviors, stronger effects are observed. Conversely, there may be a greater number of intervening parent and child variables not examined in the present study that mediate the effects of women's symptoms of depression on children's functioning. Interestingly,

maternal behaviors did not have an immediate effect on the areas of children's school functioning examined in this study. It is possible, however, that maternal depressive symptoms or maternal behaviors would have an expected impact on children's school functioning if examined again at a later point. Another possibility might be that children's school performance is more sensitive to other types of parenting behaviors and family functioning, such as monitoring, family cohesion, and conflict.

Discussion of Hypothesis 2: Academic Achievement

For hypothesis 2, it was proposed that the observed direct effects of changes in maternal depressive symptoms at 8-10 months after study entry on children's standardized academic achievement at 12 months would decrease once maternal behaviors, children's social competence, and children's emotional maladjustment were included in the model. This proposed model would provide evidence that changes in academic achievement were mediated by maternal behaviors, children's social competence, and children's emotional maladjustment. Hypothesis 2 was rejected because no mediation was found.

Similar to hypothesis 1, changes in maternal depressive symptoms 8-10 months after study entry significantly influenced maternal behaviors of consistent discipline and rejection at one year. If mothers' depression improved or remained low, they would refrain more from rejection or criticism and provide more consistent discipline to their children. While changes of maternal depressive symptoms had a meaningful but nonsignificant direct effect on children's standardized academic achievement, it had no direct effect on the hypothesized mediators of children's social competence and

emotional maladjustment. This finding suggests that children's social competence and emotional maladjustment may be more significantly influenced by other factors not taken into consideration in the present study.

Neither changes of maternal depressive symptoms nor any of the mediating variables, maternal behaviors, children's emotional maladjustment, and children's social competence, had a significant direct effect on children's academic achievement. Academic achievement may be a more stable measure of learning than school grades or teacher's reports of academic performance (Keith et al., 1998). Keith and colleagues propose that achievement scores are less sensitive to motivation, effort, teacher attitudes, and other extraneous information than are school grades. Perhaps the stability of academic achievement described above is a function of the quality and quantity of learning opportunities that may or may not be present in the home for an extended period of time (Yeung et al., 2002). It may be hypothesized that if the mother's initial level of impairment were high, parental involvement in the child's homework and academic activities would decrease. Thus, the child would be exposed to less consistent stimulation, encouragement, and guidance for learning. These limited opportunities for learning may have a long-term impact on children's academic achievement (Keith et al., 1998; 1993).

While none of the three proposed mediating variables had a direct effect on children's academic achievement, it is worth noting that children's social competence appeared to have a relatively stronger effect in this sample than the other two variables. Given a larger sample size, social competence may appear to be a practically and statistically significant predictor of children's academic achievement.

The lack of indirect effects or mediation in this model may be attributed to the nonsignificant effect of changes in maternal depressive symptoms at 8-10 months after study entry on children's academic achievement. The lack of mediation may also be explained by the stable nature of academic achievement. Similarly, this model shows that changes in maternal depressive symptoms will affect maternal behaviors in expected ways but that these changes do not lead to immediate or proximal effects on children's social, emotional, and educational outcomes. Perhaps other dimensions of parenting, such as monitoring, or overall family functioning that have a more relevant role in children's academic achievement. These dimensions may more directly affect the quality and quantity of learning opportunities that influence children's academic achievement.

Discussion of Hypothesis 3: School Behaviors

It was hypothesized that the direct effects of changes in maternal depressive symptoms at 8-10 months after study entry on children's teacher-reported school behaviors would decrease when maternal behaviors, children's social competence, and children's emotional maladjustment at 12 months were included in the model. Specifically, it was expected that maternal behaviors, children's social competence, and children's emotional maladjustment would mediate or explain the effects of changes in maternal depressive symptoms on children's school behaviors. Hypothesis 3 was rejected because no mediation was found. The proposed mediators of maternal behaviors, children's social competence, and children's emotional maladjustment, did not explain the effects of changes in maternal depressive symptoms on children's school behaviors.

It is worth noting that no significant direct effect was found between changes of maternal depressive symptoms on children's school behaviors. Hence, a lack of mediation may be attributed to the absence of a direct effect between changes of maternal depressive symptoms at 8-10 months of study entry and children's school behaviors at 12 months, as reported by teachers. In addition, changes in maternal depressive symptoms predicted maternal behaviors but did not predict children's social competence, emotional maladjustment, and school behaviors. Thus, changes of maternal depressive symptoms may have proximal or direct effects on maternal behaviors of consistent discipline and rejection but may have distal effects on children's functioning. Furthermore, children's social competence and emotional maladjustment but not maternal behaviors predicted teacher-rated school behaviors. School behaviors may be more proximal or sensitive to the child's emotional and social functioning than by the domains of parenting assessed in the study. It is also possible that other domains of parenting not assessed in the study are more proximal to children's school behaviors than discipline and rejection. As assessed in the study, the effect of maternal behaviors on children's school behaviors may be distal or lead to later changes in the child. As such, Shrout and Bolger (2002) stated that distal mediation processes are likely to have a smaller effect because they are more likely to be transmitted through additional links in a causal chain and be affected by competing causes.

Discussion of the Findings of Secondary Analyses

Discussion of Secondary Analysis 1: Academic Performance

The existing literature has documented the long-term impact of maternal depression on children's outcomes. Thus, the analysis of hypothesis 1 was repeated using Time 1 or mother's initial level of impairment as the independent variable. A mediational model was meaningful but failed to reach statistical significance for children's social competence. Thus, the effects of initial maternal depressive symptoms on children's academic performance one year later decreased when teacher-rated social competence was included in the model. Therefore, initial levels of depressive symptoms in women appeared to have a long-lasting negative effect on their children's social competence, which in turn, affected how the children performed academically in school. Initial maternal depressive symptoms also had a marginal direct effect on maternal behaviors and children's emotional maladjustment one year later. Thus, the findings suggest a trend for the initial level of maternal depressive symptoms to be a long-term direct influence on children's emotional maladjustment and social competence, and a long-term indirect influence on children's academic performance. Further, a comparison of the primary test of hypothesis 1 and of the secondary analysis of hypothesis 1 reveals that the initial level of impairment in women has a potentially higher predictive value on children's later academic performance via its effects on social competence than changes of maternal depressive symptoms at 8-10 months of study entry.

Discussion of Secondary Analysis 2: Academic Achievement

The analysis of hypothesis 2 was repeated using mothers' initial level of impairment as the independent variable. Maternal behaviors, children's social competence, and children's emotional maladjustment did not explain the effects of initial levels of maternal depressive symptoms on children's standardized academic achievement scores 12 months later. Thus, a mediational model was not observed in this analysis. Unlike the findings of the primary test of hypothesis 2 (changes in maternal depressive symptoms at 8-10 months), initial maternal depressive symptoms had a statistically significant direct effect on children's academic achievement one year later. Initial levels of maternal depressive symptoms also had a meaningful but nonsignificant direct effect on maternal behaviors and children's social competence and emotional maladjustment one year later. Thus, the initial level of maternal depressive symptoms appears to be a long-term predictor of children's academic achievement and this effect does not appear to be explained by any of the variables examined in the study. Further, a comparison of the primary test of hypothesis 2 and of the secondary analysis of hypothesis 2 indicates that initial levels of impairment in women have a potentially higher predictive value on children's later academic achievement than changes in maternal depressive symptoms at Time 2.

Discussion of Secondary Analysis 3: School Behaviors

The analysis of hypothesis 3 was repeated using mothers' initial level of impairment as the independent variable. Surprisingly, a mediational model was

statistically significant for the effects of initial maternal depressive symptoms on children's teacher-rated school behaviors one year later when children's social competence and emotional maladjustment combined were included in the model. Specifically, initial levels of depressive symptoms in women had a long-lasting negative effect on children's social competence and emotional adjustment, which in turn, affected how children behaved in school. Initial levels of maternal depressive symptoms also had a meaningful but nonsignificant effect on maternal behaviors one year later, but the maternal behaviors studied did not appear to influence children's school behaviors. Thus, the initial level of maternal depressive symptoms appears to be a potential long-term predictor of children's emotional maladjustment and social competence, and a long-term indirect predictor of children's school behaviors. Thus, a comparison of findings between the primary test and the secondary analysis of hypothesis 3 reveals that the initial level of impairment in women is a stronger predictor than changes in parenting behaviors of children's later school behaviors, and that the initial maternal impairment acts via the child's emotional and social functioning. , Changes in maternal depressive symptoms at 8-10 months was a stronger predictor than mothers' initial level of impairment of parenting behaviors at 12 months, but these parenting behaviors did not have a significant independent effect on children's school behaviors.

Discussion of the Findings in the Context of the Existing Literature

Of relevance is the application of these results to models of maternal depression, particularly when these models are applied to clinical populations. First, the implications of the findings for the effects of maternal depression on children are described in the

context of the current literature. Second, the implications of the findings for the effects of changes in maternal depression on children's outcomes are discussed. Third, the clinical and educational relevance of these results is discussed, followed by study limitations and recommendations for future research.

Effects of Maternal Depression on Children's Functioning

The effects of maternal depression on children's outcomes have been well documented (Burney Hamilton et al., 1997; Goodman et al., 1993; Hammen, 1996; Wright et al., 2000). Several authors have proposed that children of depressed mothers are more likely to experience impairment in social competence (Goodman et al., 1993) and emotional functioning (Beardslee et al., 1998; Downey & Coyne, 1990). The findings of the present study provide further evidence that depression in mothers is associated with impairment in emotional adjustment and social competence in children a year later. These children are at higher risk of developing psychological symptoms, such as aggression, hyperactivity, conduct problems, anxiety, depression, and somatization. In addition, these children were found to have deficient social skills and competence, such as cooperation, assertion, and self-control.

Wright et al. (2000) hypothesized that because social and emotional functioning is associated with school functioning, children of depressed mothers who experience impairment in social and emotional functioning would exhibit greater difficulty in school. In the present children of mothers whose initial level of depression was elevated were at risk for emotional maladjustment (internalizing and externalizing symptoms), which in turn, affected their behaviors and coping strategies in school. Children's emotional

maladjustment, however, did not have a significant effect on academic performance or academic achievement. Only those children who had impaired social skills were more likely to do poorly in academic performance and to display maladjusted school behaviors. Thus, the present study advances the existing knowledge by identifying differential influences on children's school functioning.

This study suggests that the relationship between maternal depression and children's educational outcomes is not mediated by the general quality of parenting as measured here by rejection and consistency of discipline. It is likely that as shown in previous research, aspects of parenting such as monitoring are more predictive of children's academic outcomes (Chilcoat et al, 1996; Izzo et al., 1999). In addition, Timko et al. (2002) found that family domains of functioning such as cohesion and conflict are more predictive of children's socio-emotional functioning than parenting behaviors. Future research in maternal depression must broaden its scope to include an array of domains of parenting and family functioning and examine their differential influence on a host of children's outcomes.

In the study, although a reduction in maternal depressive symptoms improved maternal behaviors, neither change had an effect on the other proposed mediators, children's social competence and emotional adjustment. An amelioration of symptoms did not lead to improvement in children's social competence and emotional adjustment. In support of the current literature, maternal depression can have a long-term impact on children's social competence and emotional adjustment. Thus, initially depressed women who experience symptom relief also may improve in their parenting behaviors but their

children will in all probability continue to experience maladaptive emotional, social, and school functioning.

The present findings highlight the necessity of incorporating educational variables in the research of maternal depression outcomes for children. Wright et al. (2000), in one of the few studies addressing the educational outcomes of children of depressed mothers, found that young children of mothers who were depressed later adapt less well to the school environment, with maladaptive behaviors ranging from behavior problems and peer relations to academic performance, than children of mothers who were not depressed. In the present study, children's social competence was influenced by initial levels of maternal depressive symptoms, and in turn was linked to children's academic performance in the classroom, behaviors in school, and less so to performance on tests of academic achievement. Children's emotional adjustment was significantly linked to children's behaviors in school. Although not tested in the study, it is likely that long-standing difficulties in school functioning reciprocally affect children's social competence and emotional adjustment. In a study of the progression of academic functioning and mental health in adolescence, Roeser et al. (1999) found that academic difficulties in the school years can place children at risk for subsequent problems such as school withdrawal, substance abuse, delinquent activity, and teenage pregnancy. These conclusions are based on a general population and remain tentative for our purposes until replicated with children of depressed parents.

This follow-up study not only reveals the long-term effects of maternal depressive symptoms on children's educational outcomes, but also explores the mechanisms underlying this relationship. Children's later emotional adjustment and social competence

are influenced by the initial severity of maternal depressive symptoms. While children's emotional adjustment and social competence influence children's school behaviors, only children's social competence influences children's academic performance. Thus, the initial severity of maternal depressive symptoms has an indirect effect on later school behaviors of children through its effect on children's social competence and emotional adjustment combined, and an indirect effect on the academic performance of children through its effect on children's social competence.

In summary, the present study has implications for the model of the effects of maternal depression on children by identifying the underlying mechanisms that may explain this effect. First, children whose mothers show heightened levels of depression are at greater risk for impairments in social competence and emotional adjustment, which in turn contribute to poor educational outcomes. Thus, the study takes the existing knowledge about maternal depression further as it assesses direct and mediated effects. First, not only does maternal depression have an impact on children's educational outcomes, it appears to potentially do so through children's social and emotional functioning. Second, these effects appear to endure in children up to 12 months after the mother's initial level of depression was assessed. Third, the present study not only found evidence for effects on children's educational outcomes, it also found support for differential effects. While emotional maladjustment and social competence were found to mediate the relationship between initial levels of depressive symptoms in women and children's school behaviors one year later, only social competence showed a trend to mediate the relationship for academic performance.

Effects of Changes in Maternal Depression on Children's Functioning

To date, no longitudinal study has examined the mediated effects of changes in maternal depressive symptoms on children's educational outcomes. For the present study, the examination of possible mediated effects or underlying mechanisms yielded relevant yet non-substantive findings. Current levels of maternal depressive severity did not predict children's current level of social, emotional, or school functioning. As previously noted, current levels of depression in women predicted current parenting behaviors. However, these parenting behaviors did not predict children's school behaviors, academic performance, and academic achievement. The existing literature on the remission of maternal depression on children's outcomes is reviewed to better understand the findings of the study.

Several authors have hypothesized that if maternal depression is associated with impairment in children, amelioration of symptoms would be associated with expected improved functioning in children (Cowan & Cowan, 2002; Gotlib & Lee, 1996). The majority of studies conducted to date have found, however, that children continue to experience difficulties even after their mothers' depression ameliorates. Billings and Moos (1986) conducted a follow-up study of depressed parents, in which remitted parents continued to report greater dysfunction in their children and a greater number of stressors and conflict than did never-depressed parents. Alpern and Lyons-Ruth (1993) found that children of chronically depressed mothers and of remitted mothers had more problem behaviors at home and school than children of non-depressed mothers. Children of

remitted mothers were more anxious at school than children of non-depressed and chronically depressed mothers. Lee and Gotlib (1991) reported a 10-month follow-up of 7- to 13-year-old children of both depressed and nondepressed patients and community controls. The authors' results indicated that the group of formerly depressed women, despite a significant reduction in their depressive symptoms, continued to describe their children as having a greater number of behavior problems than did the nondepressed control mothers.

More recently, Timko et al. (2002) compared children of parents with unipolar depression who were stably remitted, partially remitted, and nonremitted. The authors found that children of partially remitted parents had more psychological distress than children of control parents at 1 year and 10 years. Children of parents who had stably remitted were comparable to controls in psychological distress at 1 year but these gains did not maintain at 10 years. These children were more likely to suffer anxiety and to report feeling sad than controls. The present study offers support for the findings of the studies mentioned above. The mothers' initial severity of symptoms was more predictive of children's later emotional adjustment, social competence, and educational outcomes, even if the mothers' symptoms changed.

In support of Timko et al. (2002), children's later outcomes in the present sample were more influenced by the initial level of the mothers' depressive symptoms than by the level of improvement or change in the mothers almost one year later. Perhaps, women whose depressive symptoms at baseline were more elevated had recurrences of depression given the ongoing presence of stressors such as limited socioeconomic resources and social support. In fact, Moos, Cronkite, and Moos (1998) found that

depressed individuals who improve in symptoms experience long-term improvements in other areas but that those individuals who were more severely depressed at baseline were more likely to have recurrent episodes.

Individuals and families are significantly shaped by contextual factors (Kotchik, & Forehand, 2002). Thus, the present sample of women may have been more impaired by depression given the compounding socio-economic and familial stressors in their lives. As noted by several authors (Beardslee et al., 1983; Sameroff, Seifer, Zax, & Barocas, 1987), greater impairment of maternal depression disrupts children's course of development. In addition, the chronicity of depression in women may result in the child's early exposure to maternal depression (Goodman and Gotlib, 1999). For the low-income women in the study depression may have been a chronic or recurring condition to which their children were exposed at an early age, thereby interrupting the course and development of their adaptive functioning. Future research needs to examine the effects of severity and chronicity of depression in low-income families who, additionally, are at-risk for chronic stress.

In terms of the broader context of depression, Cicchetti and Schneider-Rosen (1984) reported that children's functioning improves when family adversity, not necessarily parental depression, subsides. In the present study it was not possible to examine the degree to which socioeconomic and interpersonal adversity improve for these families, including financial disadvantage, family and community violence, marital conflict, social support, stressful life events, discrimination, and social isolation, among others. It is unclear whether changes in depression result in changes in the occurrence or severity of family adversity or even in resiliency to such events, or whether changes in

family adversity result in changes in depression. In the case of the latter, examining the outcomes of the present sample at a later point might offer clarification as to whether reduction of family adversity, as opposed to maternal depression per se, contributes to a greater enhancement of children's adaptive outcomes.

Clinical and Educational Implications

Identification of Depression in the Community

In this study low-income women were recruited from the public sector (WIC clinics, family-planning clinics, pediatrician's offices), making the sample more representative of the population of young, low-income minority women. None of these women were seeking mental health services or already involved in mental health services when recruited for the study. Given the long-term impact of maternal depressive symptoms on children's functioning, efforts should be made to identify at-risk families early (Beardslee & Podorefsky, 1988; Beardslee & Wheelock, 1994) to prevent or delay the onset or severity of maternal depression.

Prevention Interventions

Prevention can reduce the risk of depression in women and it can enhance family functioning and promote social support and access to resources in the community (Le, Muñoz, Ippen, & Stoddard, 2003). When implemented effectively, preventive interventions can protect families from depression and other problematic outcomes that interfere with children's academic and socio-emotional functioning, as well as with

parenting and parents' ability to enter the workforce. Finally, prevention can be cost-effective because it can be delivered to a large number of families who are at-risk for problematic outcomes, hence, avoiding more costly services such as mental health treatment or psychiatric emergency services (Clarke, DeBar, Lynch, & Wisdom, 2003).

Keeping in mind the burden of depression for families and society (McGuire et al., 2002), researchers are focusing more on the prevention of depression. Beardslee, Versage, Salt, and Wright (1999) evaluated a preventive family intervention of depression that targets parenting deficits and communication problems. Since then, Podorefsky, Mcdonald-Powdell, and Beardslee (2001) have adapted that intervention to low-income families, and Beardslee and colleagues (2003) are currently developing a cultural adaptation of their prevention program to low-income Latino families. Similarly, Cardemil and Miller (2003) have piloted a family intervention program to prevent depression in low-income Latina women. Further evidence of the increased focus on prevention with depressed women is the conceptual contributions by Le, Muñoz, Ippen, and Stoddard (2003) who presented a public health perspective to the prevention of depression in women in a volume devoted to the prevention of depression in women.

Family and Community Interventions

Further, the study shows the importance of intervening at the level of the family. Depression is a disorder that affects the family, not just the individual (Beardslee et al., in submission). Depression also appears to be mutually exacerbated by major stressors such as poverty, marital conflict, and other stressful life events (Beardslee et al., in submission; Downey & Coyne, 1990). Keitner, Miller, and Ryan (1993) state that to

neglect the social environment in which depression exists limits treatment effectiveness and likely prolongs the illness. Thus, interventions for depressed women should not be limited to targeting the individual treatment of symptoms, but the broader family and community context. Specific interventions may include psychoeducation about depression, enhancement of problem solving, family support and communication, parenting practices, and development and sustainability of community support and involvement. Because maternal depression has been found to have a significant effect on parenting abilities and parent-child interactions, particular focus should be given to modeling warmth, nurturance, consistent discipline, problem solving, effective coping, and appropriate social negotiation of relationships.

School-Based Initiatives and Interventions

Clinical and educational relevance are highly interwoven. In the present study, social competence was the most meaningful pathway through which maternal depressive symptoms affected children's behaviors and academic performance at school. Thus, programs capable of identifying, preventing, and treating socioemotional problems and educational risks in children must be implemented in the school setting. These programs may be designed to proactively foster interpersonal negotiation, assertion, cooperation, problem solving, and leadership skills, some of which may already be targeted by school mental health interventions.

Schools can play a particularly important role in the identification and intervention of high-risk families. Low-income families are underrepresented in the mental health services sector (Roosa, Dumka, Gonzales, & Knight, 2002).

Transportation, lack of insurance, insufficient daycare, or knowledge of services have been found to be common reasons for low-income families underutilizing mental health services (Vega & Alegria, 2001). In addition, stigma of mental illness, immigration status, and low English-language competency may contribute to underutilization of these services in Latino and other immigrant families. Thus, identifying and intervening with these families may be facilitated through systems already familiar to the child such as the school. Children spend a great deal of time in school and teachers should be trained to assess and identify children who are at-risk for impaired educational, social, and emotional functioning. School-based interventions have the benefit of offering regular meetings for students or families while overcoming the obstacles mentioned above. In addition, these systems would strengthen the family-school relationship in which schools become more involved in the well being of their students, and parents gain social support and greater involvement with the multiple contexts and needs of children. A successful example comes from Cardemil, Reivich, and Seligman (2002) in which they found evidence for a school-based depression prevention program that teaches cognitive and social problem-solving skills to groups of low-income middle school students.

Limitations and Future Directions

As with any research, limitations exist with this study that must be identified as they influence the strength of the conclusions drawn and provide directions for the future. Methodological issues are inherent in the design of the study. The small sample size and large number of predictor variables limited the analyses that could be conducted. On the one hand, significant mediation may have been found for the effects of changes in

maternal depressive symptoms on children's school functioning if the statistical power had been greater. On the other hand, the small sample size limited the types of analyses conducted. For example, examining potential moderators of the effects of changes in maternal depressive symptoms on children's outcomes may have enhanced the findings of the study. Some of these moderators include children's age at the time of the mother's depression, mothers' duration of symptoms, presence of additional social supports in children's life, and baseline functioning in children.

Although the goal of the study was to recruit a large number of mother-child dyads, recruitment was limited by common barriers to research with low-income families, including stigma about depression, transportation, and shifting family mobility, among others (Vega & Alegria, 2001). Future research should make efforts to overcome these and other obstacles to recruitment and retention.

Measurement of multiple sources and multiple methods were limited in the study secondary to the limitations of sample size. In terms of multiple sources, the larger study collected information about parenting behaviors, children's social competence, and emotional adjustment from multiple informants, including teachers, children, mothers, and other parent figures. However, for this study, the limited sample size did not allow for analyses by multiple informants across outcomes. Thus, it is possible that the findings are limited by informant bias to the extent that only teachers reported on children's school, social, and emotional functioning, and only mothers reported on maternal symptoms of depression and parenting behaviors.

With respect to multiple methods of measurement, some variables were based on a single instrument. For example, social competence was based on the Social Skills

Rating System, which includes indices of cooperation, assertion, and self-control. However, social competence includes other important variables, such as participation in social activities and peer acceptance and rejection. It is necessary for future research to assess more comprehensive components of social competence to test the influence of different components of social competence on children's functioning in school. Similarly, the Children's Report of Parenting Behavior Index (CRPBI) was used to assess maternal or parenting behaviors. Although this measure allowed for an examination of maternal acceptance and consistent discipline, it does not allow for an assessment of other important parenting behaviors, such as supervision and monitoring. Parental monitoring has been associated with children's perception of school competence (Crouter et al., 1990) and this variable may have been a more proximal mediating variable between changes in maternal depressive symptoms and children's educational outcomes than general maternal behaviors of rejection and consistent discipline.

The present longitudinal study consisted of low-income women who were depressed prior to treatment and of women who were not depressed and did not receive treatment, some of whom became depressed during their participation in the study. Following the trajectories of women who were initially depressed versus those who were not would allow a direct examination of the effects of treating maternal depression on children's educational outcomes. Because the sample consisted of these two groups of women, conclusions are valid when changes in depressive symptoms and not remission of symptoms are taken into light. A larger sample size of depressed and nondepressed women would allow researchers to conduct between-group comparisons of the educational outcomes of these families.

Finally, longitudinal studies of depression in low-income families are few. The study was able to recruit non-help-seeking disadvantaged women from the public sector and follow the family's functioning over one year. A future goal of this study is to follow-up on this sample at later points to assess whether changes of maternal depressive symptoms examined in the study make a gradual impact on children's later functioning. In addition, a future goal is to examine the contribution of moderating and other mediating variables on the findings, including the presence of a father figure, the child's age at the time of the mother's depression, the duration of the depression in the mother prior to treatment, recurrence of the mother's depression, and the child's functioning prior to the mother's depression and treatment.

Conclusions

Depression is a highly prevalent disorder among women of childbearing age. At any given time, approximately 8-12% of mothers are clinically depressed. Maternal depression has been associated with problematic outcomes in families, including impaired parenting, higher levels of conflict, socio-emotional difficulties in children, and poor academic outcomes for children. Although the effects of maternal depression on children have been well documented, little is known about children's functioning once mother's symptoms change or alleviate. There is also a gap in knowledge about *how* maternal depressive symptoms affect children's outcomes. The purpose of the study is to move beyond the description of outcomes to examine some underlying mechanisms that explain the effects of changes in maternal depressive symptoms on children's educational outcomes. The sample consisted of low-income families in which the majority of mothers

were depressed and participating in a mental health intervention. Symptoms of depression were assessed in women at baseline and 8-10 months later, while maternal behaviors, children's social competence, emotional adjustment, and academic outcomes were assessed at 12 months of baseline. Findings suggested that changes in maternal depressive symptoms at 8-10 months affected parenting behaviors but did not influence children's social, emotional, and educational outcomes. Initial levels of maternal depressive symptoms, on the other hand, not only influenced children's later academic achievement, it had a meaningful influence on children's later school behaviors and academic performance through changes in social competence and emotional adjustment in children. Thus, support was found for maternal depression to have a long-term effect on children's adjustment. The findings were described in the context of methodological limitations, such as small sample size and, measurement restrictions. Recommendations for future research included overcoming barriers to identifying depression in low-income samples, implementing and evaluating preventive interventions for depression, designing interventions that promote family and community resources, and designing school-based policies and interventions for the effective identification and intervention of children at risk for problematic outcomes.

Appendix A

Sample Items from the Hamilton Rating Scale for Depression (HAM-D)/(SIGH-AD)

Directions: Now I'd like to ask you some questions about yourself, your thoughts and feelings, and about your health and daily activities. I'd like to start by asking you some questions about the past week. How have you been feeling since last [DAY OF WEEK]?

1. **Depressed Mood** (Sadness, hopeless, helpless, worthless)
What's your mood been like? Have you been feeling down or depressed? Sad? Hopeless? How often have you felt this way? Every day? All day?

_____ 0= Absent
1= Indicated only on questioning
2= Spontaneously reported verbally
3= Communicates non-verbally (i.e., through facial expression, posture, voice, and tendency to weep)
4= Person reports VIRTUALLY ONLY these feeling states in his/her spontaneous verbal and non-verbal communication

2. **Feelings of Guilt**
Have you been putting yourself down this past week, feeling you've done things wrong, or let others down? Have you thought that you've brought [FEELING] on yourself?

_____ 0= Absent
1= Self reproach, feels he/she has let people down
2= Ideas of guilt or rumination over past errors or sinful deeds
3= Present illness is a punishment. Delusions of guilt
4= Hears accusatory or denunciatory voices and/or experiences threatening visual hallucinations

3. **Suicide**
In the past week, have you had thoughts that life is not worth living? What about thinking that you'd be better off dead? Have you had thoughts of hurting or killing yourself?

_____ 0= Absent
1= Feels life is not worth living
2= Wishes he were dead or any thoughts of possible death to self
3= Suicidal ideas or gesture
4= Attempts at suicide (any serious attempts rates 4)

4. **Insomnia Early**
Have you had any trouble falling asleep at the beginning of the night? How long has it been taking you to fall asleep?

_____ 0= No difficulty falling asleep
1= Complains of occasional difficulty falling asleep (i.e., more than 1/2 hour)
2= Complains of nightly difficulty falling asleep

Appendix B

Atypical depressive symptom items included in the HAM-D

1. **Mood Reactivity** (i.e. mood brightens in response to actual or potential positive events)

   0 – absent
   1 – sometimes improves
   2 – usually improves

2. **Hypersomnia**

   0 – no difficulty
   1 - > 10hrs/day, more days than not
   2 - > 10hrs/ day, regularly

3. **Increased Appetite**

   0 – none
   1 – increased appetite
   2 – feels like eating out of control

4. **Weight Gain**

   0 – no weight gain
   1 – probably weight gain due to current depression
   3 – definite (according to patient) weight gain due to depression

5. **Heaviness in Limbs**

   0 – none
   1 – probably or mild
   2 – definite or severe

6. **Rejection Sensitivity** (i.e., gets down or angry when perceives rejection)

   0 – absent
   1 – occurs, though does not cause clear-cut changes in functioning
   2 – severe enough to cause significant social or occupational impairment

Appendix C

Teacher's Ratings of Children's Academic performance

Directions: Please tell me the names of the academic subjects [CHILD] takes this year/took last year. (LIST IN FIRST COLUMN) Now for each subject, please tell me if [CHILD] is/was performing far below grade level, somewhat below grade level, at grade level, somewhat above grade level, or far above grade level. If you don't know how the child is/was performing in one of the subjects he/she takes, it's okay to say "I Don't Know". Let's start with (FIRST SUBJECT).

Academic Subject	Far below grade	Somewhat below grade	At grade level	Somewhat above grade	Far above grade	DK
a.	1	2	3	4	5	8
b.	1	2	3	4	5	8
c.	1	2	3	4	5	8
d.	1	2	3	4	5	8
e.	1	2	3	4	5	8
f.	1	2	3	4	5	8

Appendix D

Items of Teacher-Rated School Problems in Children

1. Has [CHILD] repeated a grade/been expelled from school?

   No.....0
   Yes, repeated.....1
   Yes, expelled.....8

2. To the best of your knowledge, does [CHILD] have an identified disability condition?

   NO.....1
   YES.....2

3. [This school year/When CHILD was in your class], did [CHILD] receive any special help in school for learning, emotional, or behavioral problems?

   NO.....0
   YES.....1
   DK.....8

4. Have you met or spoken with [CHILD'S] mother or female caregiver this year? IF PAST TEACHER ASK: Did you meet or speak with [CHILD'S] mother or female caregiver when you were his/her teacher.

   NO.....0
   YES.....1

   4A. What was the purpose of the meeting? CODE ALL THAT APPLY

   General discussion of [CHILD'S] school work.....1
   To discuss an academic problem 2
   To discuss a behavior or discipline problem.....3
   During an open house or back-to-school night.....4

Appendix E

Sample Items of the Teacher Version of the Behavioral Assessment System of Children - AGES 6-11

Now I will read some phrases that describe how children may act. Please tell me whether CHILD has done each behavior never, sometimes, often, or almost always in the last **six months** [that you taught the child]. If the child's behavior changed a great deal during that period, describe the child's most recent behavior.

If you don't know or are unsure, give your best estimate.

		N	S	O	A
1.	Adjusts well to new teachers.	☐	☐	☐	☐
2.	Argues when denied own way.	☐	☐	☐	☐
3.	Bites nails.	☐	☐	☐	☐
4.	Gives up easily when learning something new.	☐	☐	☐	☐
5.	Stares blankly.	☐	☐	☐	☐
6.	Shows a lack of concern for others' feelings.	☐	☐	☐	☐
7.	Stays disappointed a long time if a favorite activity is cancelled.	☐	☐	☐	☐
8.	Rushes through assigned work.	☐	☐	☐	☐
9.	Attends after-school activities.	☐	☐	☐	☐
10.	Does not complete tests.	☐	☐	☐	☐
11.	Volunteers to help with things.	☐	☐	☐	☐
12.	Complains of being cold.	☐	☐	☐	☐
13.	Reads assigned chapters.	☐	☐	☐	☐
14.	Refuses to talk.	☐	☐	☐	☐

Appendix F

Sample Items of the Teacher Version of the Social Skills Rating System

The next set of questions are designed to measure HOW OFTEN a student exhibits certain social skills that are important for success in the classroom. When I ask each question, please tell me how often CHILD has exhibited this skill in the last three months: very often, sometimes, or never. So that would be since the [beginning/middle/end] of [MONTH].

		How Often?		
		Never	Sometimes	Very often
1.	Controls his/her temper in conflict situations with his/her peers.	0	1	2
2.	Introduces himself/herself to new people without being told.	0	1	2
3.	Appropriately questions rules that may be unfair.	0	1	2
4.	Compromises in conflict situations by changing his/her own ideas to reach an agreement.	0	1	2
5.	Responds appropriately to peer pressure.	0	1	2
6.	Says nice things about himself/herself when appropriate.	0	1	2
7.	Invites others to join in class activities.	0	1	2
8.	Uses free time in an acceptable way.	0	1	2
9.	Finishes class assignments within time limits.	0	1	2
10.	Makes friends easily.	0	1	2
11.	Responds appropriately to teasing by peers.	0	1	2
12.	Controls his/her temper in conflict situations with adults.	0	1	2
13.	Receives criticism well.	0	1	2
14.	Initiates conversations with peers.	0	1	2
15.	Uses time appropriately while waiting for help.	0	1	2
16.	Produces correct schoolwork.	0	1	2
17.	Appropriately tells you when he/she thinks you have treated him/her unfairly.	0	1	2

Appendix G

Sample Items of CRPBI (Maternal Behaviors)

Read each statement. Then put a check next to the answer that describes you in your relationship with your child <u>in the past month</u>.

1. In the last month, I made my child feel better by talking over his/her worries with him/her.

   ☐ Like me
   ☐ Somewhat like me
   ☐ Not like me

2. I was not very patient with my child.

   ☐ Like me
   ☐ Somewhat like me
   ☐ Not like me

3. I sometimes forgot a rule that I had made.

   ☐ Like me
   ☐ Somewhat like me
   ☐ Not like me

4. I sometimes thought my child's ideas were silly.

   ☐ Like me
   ☐ Somewhat like me
   ☐ Not like me

5. I punished my child for doing something one day but ignored it the next time he/she did it.

   ☐ Like me
   ☐ Somewhat like me
   ☐ Not like me

Appendix H

Parental Consent Form

WE CARE FOR KIDS

ID#_____

Mothers' Consent to Participate

Purpose of the Study:
This is a study about how children are doing and feeling, and about their use of health care. It involves children of mothers who are participating in the We Care study of women. Some, but not all, of the mothers are depressed. This study is being carried out by researchers from the Johns Hopkins University School of Public Health and Georgetown University.

Description of the Study:
All the mothers of children between 4-13 years old who are involved in the We Care study are being asked to have their children join the study. If you have more than one child in this age range, only one of them will be asked to join.

If you agree, we will explain this study to you and your child, and will make sure that he or she wants to participate before you both begin.

The study will last for two years. We will ask you and your child to have an interview at your home today and four or five other times. The schedule of the interviews is attached for your information. When you are called on the phone every month or two as part of the We Care study, we will ask a few questions about how your child is doing. This first time we come to your home, we will stay about 2 1/2 hours. After that it will be about 2 hours.

At the first interview and about a year later, we would like to videotape you and your child putting together a snack you can share. Mothers and older children will be asked to discuss something that you sometimes have disagreements about. Mothers with younger children will work on building something together. Later, we would like to talk briefly on the phone with your child's father or someone else who is like a parent to your child, and also talk to the child's teacher on the phone. We will ask you to give separate permissions for these contacts.

You and your child do not have to be in the study and you can decide to stop at any time. Nothing will change about your medical care or your child's medical care if you and your child decide not to be in the study of children.

After this two-year study is over, it is possible that we will want to contact you again to see how you and your child are doing. We would ask you at that time if you want to participate in another study. If you do not, you do not have to be in that study, even if you were in this one.

Procedures:
We will interview you and your child today. Your interview will take about two hours and your child's will take about one and a half hours, including several breaks. The videotaping will take about one-half hour. We will leave a questionnaire with you to complete in about 20 minutes and mail back to us. We will call your child and ask him/her some more questions for about 20 minutes.

You will receive $15 for each of the home interviews, your child will receive a gift valued at $10 for each of the home interviews. When we videotape you, we will give you another $10. When you mail back the questionnaire we leave with you, we will send you a check for $10.

So, if you complete all of the parts of the study that involve your child, in the first month you will receive $35 and your child will receive a gift. You will each get a gift like this every time you help us.

Risk/Discomforts:
Some questions are about things that may concern you or your child. We ask about emotional problems, family activities, injuries and safety practices, because these things relate to the health of children. You may be uncomfortable being in front of the video camera, but most people find that they quickly get used to it. Your answers and your tapes are confidential. Only researchers will see the videotapes. You and your child will not be told about the other person's answers and we will not talk with anyone about your answers or your child's answers.

There are two exceptions. If your child has a very serious problem such as thinking about hurting himself/herself or someone else, we will make sure that your child gets help. We would talk with you first. Also, if we learn that your child is in danger or has been seriously harmed in the past, we are required to report this so that someone can make certain that your child will be safe in the future.

All the information we get is stored only by numbers, not by names. Your name will not be used when we report the results of the study. You will not get any information back from this study.

Benefits:
You may become aware of your child's health or mental health problems. If you wish to receive help for these problems, ask our staff to have the Principal Researcher contact you.

You will be helping us learn more about the children of mothers who have depression, even if you yourself are not depressed or get over your depression. Then we and others can find better ways of helping children and families in this situation.

General Information:
By signing this form you show that you are willing to join and have your child join the study. It does not mean that you agree to have us call your child's father or other caregiver or your child's teacher we will ask you to sign a separate form for that later. You may withdraw from the study at any time. If you do not want to join the study, or you decide to stop being in the study, nothing will happen to you or your child and you can still get the treatment you are now getting from the clinic and you will still be in the We Care Study.

If you have any questions or think that you have not been treated fairly, you should talk with the Principal Researcher, Dr. Anne W. Riley, Ph.D., toll-free at (877) 365-6960 or call the Committee on Human Research in the School of Hygiene and Public Health, Johns Hopkins University, at (410) 955-3193. The Johns Hopkins University and the Federal Government do not have any program to provide compensation to you if you experience bad effects which are not the fault of the investigators.

If you agree to join the study and to have your child join if he/she agrees, please sign your name below.

_____ _____

Signature of Parent Date

_____
Signature of Researcher

Appendix I

Child Assent Form (Ages 8-10)

ID#_____

WE CARE FOR KIDS PROJECT

Explanation of Research Project: We are asking you and your mother to be in a study. The study is about how children are feeling, how they are getting along with their friends and in school, and about their health.

If you and your mother agree to be in this study, we will ask you some questions today and we will make a videotape of you and your mom doing things together and talking about something that you sometimes have disagreements about. In the next few weeks, we will also call you on the phone to ask you some questions for about 20 minutes. We will come see you several more times over the next two years.

We will also talk to your Dad or someone else who takes care of you and also talk to your teacher. Talking to them will help us learn more about how you are doing and how healthy you are.

When you finish the interview today, you will get a nice gift like a game or a toy. And when you answer questions for us on the phone, we will send you another gift in the mail. Do you have any questions?

If you agree to join this study, please sign your name below.

_____ _____

Signature of child Date

_____

Signature of Researcher

Appendix J

Child Consent Form (Ages 5-7)

ID#_____

WE CARE FOR KIDS PROJECT

Explanation of Research Project: We are asking you and your mother to help us by answering some questions about how you are feeling and how you are doing. Then we want to have you and your mother put a snack together and build something together. We will make a videotape of you and your mother, but no one will see it except us. When you do these things, you will help us understand children's health and feelings.

We will come see you and do the same things several more times over the next two years.

We will also talk to your Dad or someone else who takes care of you and also talk to your teacher. Talking to them will help us learn more about how you are doing and how healthy you are.

When you finish the interview today, you will get a nice gift like a game or a toy. Do you have any questions?

If you agree to join this study, please sign your name below.

_____ _____

Signature of child Date

_____

Signature of Researcher

Appendix K

Consent to Contact Teacher

ID#_____

WE CARE FOR KIDS PROJECT

Dear Parent:

As you know, we are studying child health and development and the kinds of health and educational services they need. Because teachers are so important in children's lives, we would like to talk to _____'s teacher about how he/she is doing. We would like to talk to his/her teacher by phone for no more than 30 minutes. We will ask how he/she is doing in school, getting along with classmates and whether he/she needs any special help. If that is okay with you, please sign this form.

By signing this form, you give your permission for us to contact CHILD's teacher by phone.

_____ _____

Signature of Parent Date

_____

Printed Name of Parent

_____

Signature of Researcher

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